

PMID- 26258630
OWN - NLM
STAT- In-Data-Review
DA - 20150819
IS - 1944-8252 (Electronic)
IS - 1944-8244 (Linking)
VI - 7
IP - 32
DP - 2015 Aug 19
TI - In Situ Method for Measuring the Mechanical Properties of Nafion Thin Films during Hydration Cycles.
PG - 17874-83
LID - 10.1021/acsami.5b04080 [doi]
AB - Perfluorinated ionomers, in particular Nafion, are an essential component in hydrogen fuel cells, as both the proton exchange membrane and the binder within the catalyst layer. During normal operation of a hydrogen fuel cell, the ionomer will progressively swell and deswell in response to the changes in hydration, resulting in mechanical fatigue and ultimately failure over time. In this study, we have developed and implemented a cantilever bending technique in order to investigate the swelling-induced stresses in biaxially constrained Nafion thin films. When the deflection of a cantilever beam coated with a polymer film is monitored as it is exposed to varying humidity environments, the swelling induced stress-thickness product of the polymer film is measured. By combining the stress-thickness results with a measurement of the swelling strain as a function of humidity, as measured by quartz crystal microbalance (QCM) and X-ray reflectivity (XR), the swelling stress can be determined. An estimate of the Young's modulus of thin Nafion films as a function of relative humidity is obtained. The Young's modulus values indicate orientation of the ionic domains within the polymer films, which were confirmed by grazing incidence small-angle X-ray scattering (GISAXS). This study represents a measurement platform that can be expanded to incorporate novel ionomer systems and fuel cell components to mimic the stress state of a working hydrogen fuel cell.
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LA - eng

PT - Journal Article

DEP - 20150810

PL - United States

TA - ACS Appl Mater Interfaces

JT - ACS applied materials & interfaces

JID - 101504991

SB - IM

OTO - NOTNLM

OT - Nafion

OT - curvature

OT - humidity

OT - modulus

OT - stress

OT - thin films

EDAT- 2015/08/11 06:00

MHDA- 2015/08/11 06:00

CRDT- 2015/08/11 06:00

PHST- 2015/08/10 [aheadofprint]

AID - 10.1021/acsami.5b04080 [doi]

PST - ppublish

SO - ACS Appl Mater Interfaces. 2015 Aug 19;7(32):17874-83. doi: 10.1021/acsami.5b04080. Epub 2015 Aug 10.

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OWN - NLM

STAT- Publisher

DA - 20150812

LR - 20150813

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IS - 1944-8244 (Linking)

DP - 2015 Aug 12

TI - Activating Aluminum Reactivity with Fluoropolymer Coatings for Improved Energetic Composite Combustion.

AB - Aluminum (Al) particles are passivated by an aluminum oxide (Al₂O₃) shell. Energetic blends of nanometer-sized Al particles with liquid perfluorocarbon-based oxidizers such as perfluoropolyethers (PFPE) excite surface exothermic reaction between fluorine and the Al₂O₃ shell. The surface reaction promotes Al particle reactivity. Many Al-fueled composites use solid oxidizers that induce no Al₂O₃ surface exothermicity, such as molybdenum trioxide (MoO₃) or copper oxide (CuO). This study investigates a perfluorinated polymer additive, PFPE, incorporated to activate Al reactivity in Al-CuO and Al-MoO₃. Flame speeds, differential scanning calorimetry (DSC), and quadrupole mass spectrometry (QMS) were performed for varying percentages of PFPE blended with Al/MoO₃ or Al/CuO to examine reaction kinetics and combustion performance. X-ray photoelectron spectroscopy (XPS) was performed to identify product species. Results show that the performance of the thermite-PFPE blends is highly dependent on the bond dissociation energy of the metal oxide. Fluorine-Al-based surface reaction with MoO₃ produces an increase in reactivity, whereas the blends with CuO show a decline when the PFPE concentration is increased. These results provide new evidence that optimizing Al combustion can be achieved through activating exothermic Al surface reactions.

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LA - ENG

PT - JOURNAL ARTICLE

DEP - 20150812

TA - ACS Appl Mater Interfaces

JT - ACS applied materials & interfaces

JID - 101504991

OTO - NOTNLM

OT - aluminum fluoride

OT - aluminum powder

OT - combustion

OT - energetic materials

OT - exothermic surface chemistry

OT - fluorine

OT - oligomers

OT - preignition reaction
 EDAT- 2015/08/13 06:00
 MHDA- 2015/08/13 06:00
 CRDT- 2015/08/13 06:00
 AID - 10.1021/acsami.5b05238 [doi]
 PST - aheadofprint
 SO - ACS Appl Mater Interfaces. 2015 Aug 12.

PMID- 26226193
 OWN - NLM
 STAT- Publisher
 DA - 20150812
 LR - 20150812
 IS - 1944-8252 (Electronic)
 IS - 1944-8244 (Linking)
 DP - 2015 Aug 12
 TI - Self-Stratified Antimicrobial Acrylic Coatings via One-Step UV Curing.
 AB - We designed and synthesized a novel quaternary ammonium methacrylate compound (QAC-2) bearing a perfluoroalkyl tail on one end and an acrylic moiety on the other. Via one-step UV curing of QAC-2 and methyl methacrylate (MMA) with ethylene glycol dimethacrylate (EGDMA) as the cross-linker, we obtained cross-linked coatings with excellent antimicrobial property, as demonstrated by the total kill against both Gram-negative *Escherichia coli* (*E. coli*) and Gram-positive *Staphylococcus epidermidis* (*S. epidermidis*) at a QAC-2 concentration as low as approximately 0.06 mol % (approximately 0.4 wt %) relative to MMA, which was substantially lower than the QAC amount needed in the coatings containing QACs with a hydrocarbon tail. A zone of inhibition test confirmed that the antimicrobial effect was on the basis of contact killing and there was no leaching of antimicrobial species from the cross-linked coating. The high antimicrobial potency in QAC-2-containing films was the consequence of strong surface enrichment of the fluorinated QAC, as confirmed by X-ray photoelectron spectroscopy (XPS).

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 LA - ENG
 PT - JOURNAL ARTICLE
 DEP - 20150812
 TA - ACS Appl Mater Interfaces
 JT - ACS applied materials & interfaces
 JID - 101504991
 OTO - NOTNLM
 OT - Antimicrobial coating
 OT - UV curing
 OT - perfluorinated reactive QAC
 OT - quaternary ammonium compound (QAC)
 OT - self-stratification
 EDAT- 2015/08/01 06:00
 MHDA- 2015/08/01 06:00
 CRDT- 2015/07/31 06:00
 AID - 10.1021/acsami.5b04633 [doi]
 PST - aheadofprint
 SO - ACS Appl Mater Interfaces. 2015 Aug 12.

 PMID- 25132223
 OWN - NLM
 STAT- In-Data-Review
 DA - 20150813
 IS - 1873-3727 (Electronic)
 IS - 0001-8686 (Linking)
 VI - 222
 DP - 2015 Aug
 TI - Structure of perfluorinated membranes investigated by method of standard contact porosimetry.
 PG - 425-35
 LID - 10.1016/j.cis.2014.07.009 [doi]
 LID - S0001-8686(14)00234-6 [pii]
 AB - The results of investigation of various factors influencing water distribution in perfluorinated membrane structure by method of standard contact porosimetry are summarized. The Nafion membranes (Dupon de Nemoure, USA) and MF-4SK membranes ("Plastpolymer", Russia) were the objects of the research. The influence of production process and conditioning method on porosimetric curves of perfluorinated membrane is discussed. New results related to the porosity of perfluorinated membranes after reinforcing fabric introduction and processing by organic solvents are reported. The role of the modifying components of various

nature in the shaping of transport channels in perfluorinated membrane is studied. The influence of polyaniline and hydrogen zirconium phosphate on water distribution in membrane structure is revealed. The correlation between the maximum porosity value of the membrane and its diffusion and electroosmotic permeability, as well as between the fraction of the gel pore volume and membrane selectivity is established. It allows the prediction of possible changes in the structural characteristics and also in the transport properties of the membranes under the influence of the modifying components of different types and various operating conditions.

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LA - eng

PT - Journal Article

PT - Review

DEP - 20140806

PL - Netherlands

TA - Adv Colloid Interface Sci

JT - Advances in colloid and interface science

JID - 8706645

SB - IM

OTO - NOTNLM

OT - Perfluorinated membrane

OT - Porosimetry

OT - Structure

EDAT- 2014/08/19 06:00

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SO - Adv Colloid Interface Sci. 2015 Aug;222:425-35. doi: 10.1016/j.cis.2014.07.009.
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PMID- 26153615

OWN - NLM

STAT- In-Data-Review

DA - 20150804

IS - 1520-6882 (Electronic)

IS - 0003-2700 (Linking)

VI - 87

IP - 15

DP - 2015 Aug 4

TI - Fluorinated Pickering Emulsions with Nonadsorbing Interfaces for Droplet-based Enzymatic Assays.

PG - 7938-43

LID - 10.1021/acs.analchem.5b01753 [doi]

AB - This work describes the use of fluorinated Pickering emulsions with nonadsorbing interfaces in droplet-based enzymatic assays. State-of-the-art droplet assays have relied on one type of surfactants consisting of perfluorinated polyether and polyethylene glycol (PFPE-PEG). These surfactants are known to have limitations including the tedious synthesis and interdrop molecular transport which leads to the cross-contamination of droplet contents. Previously we have shown that replacing surfactants with nanoparticles as droplet stabilizers mitigate interdrop transport of small molecules. The nonspecific adsorption of enzymes on nanoparticle surface, however, could cause structural changes in enzymes and consequently the loss of enzymatic activity. To overcome such challenge, we render nanoparticle surface nonadsorbing to enzymes by in situ adsorption of polyethylene glycol (PEG) on particle surfaces. We show that enzyme activities are preserved in droplets stabilized by PEG-adsorbed nanoparticles, and are comparable with those in drops stabilized by PFPE-PEG surfactants. In addition, our nonadsorbing Pickering emulsions successfully prevent interdrop molecular transport, thereby maintaining the accuracy of droplet assays. The particles are also simple and economical to synthesize. The PEG-adsorbed nanoparticles described in this work are thus a competitive alternative to the current surfactant system, and can potentially enable new droplet-based biochemical assays.

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LA - eng
 PT - Journal Article
 DEP - 20150721
 PL - United States
 TA - Anal Chem
 JT - Analytical chemistry
 JID - 0370536
 SB - IM
 EDAT- 2015/07/15 06:00
 MHDA- 2015/07/15 06:00
 CRDT- 2015/07/09 06:00
 PHST- 2015/07/21 [aheadofprint]
 AID - 10.1021/acs.analchem.5b01753 [doi]
 PST - ppublish
 SO - Anal Chem. 2015 Aug 4;87(15):7938-43. doi: 10.1021/acs.analchem.5b01753. Epub 2015 Jul 21.

 PMID- 26268465
 OWN - NLM
 STAT- In-Data-Review
 DA - 20150910
 IS - 1521-3773 (Electronic)
 IS - 1433-7851 (Linking)
 VI - 54
 IP - 38
 DP - 2015 Sep 14
 TI - Selective Synthesis of Single- and Multi-Walled Supramolecular Nanotubes by Using Solvophobic/Solvophilic Controls: Stepwise Radial Growth via "Coil-on-Tube" Intermediates.
 PG - 11168-72
 LID - 10.1002/anie.201505806 [doi]
 AB - Novel hexa-peri-hexabenzocoronene (HBC) derivatives, (F) HBC and (F) HBC*, which carry perfluoroalkyl segments on one side of the HBC core and long alkyl tails on the other, were synthesized. Their perfluoroalkyl segments are highly solvated in C6 F6 (solvophilic effect) and do not assemble, whereas in CH2 Cl2 , they are excluded (solvophobic effect) and assemble together consequently. For example, the use of C6 F6 and CH2 Cl2 as assembling media for (F) HBC leads to the selective formation of single- and multi-walled nanotubes, respectively. When a higher monomer concentration is applied in CH2 Cl2 , multi-walled nanotubes with a larger number of walls result. (F) HBC in CH2 Cl2 self-assembles rather slowly, thereby allowing for the observation of coil-on-tube structures, which are possible intermediates for the stepwise radial growth of the nanotubular wall. Casting of the multi-walled nanotubes onto a quartz plate yields a superhydrophobic thin film with a water contact angle of 161+/-2 degrees .
 CI - (c) 2015 WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim.
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LA - eng

PT - Journal Article

DEP - 20150812

PL - Germany

TA - Angew Chem Int Ed Engl

JT - Angewandte Chemie (International ed. in English)

JID - 0370543

SB - IM

OTO - NOTNLM

OT - electron microscopy

OT - helical structures

OT - nanostructures

OT - nanotube

OT - self-assembly

EDAT- 2015/08/14 06:00

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PHST- 2015/08/12 [aheadofprint]

AID - 10.1002/anie.201505806 [doi]

PST - ppublish

SO - Angew Chem Int Ed Engl. 2015 Sep 14;54(38):11168-72. doi: 10.1002/anie.201505806.
Epub 2015 Aug 12.

PMID- 26227075

OWN - NLM

STAT- In-Data-Review
 DA - 20150820
 IS - 1521-3773 (Electronic)
 IS - 1433-7851 (Linking)
 VI - 54
 IP - 35
 DP - 2015 Aug 24
 TI - Benzylic C(sp³) H Perfluoroalkylation of Six-Membered Heteroaromatic Compounds.
 PG - 10263-6
 LID - 10.1002/anie.201505335 [doi]
 AB - Successful benzylic C(sp³) H trifluoromethylation, pentafluoroethylation, and heptafluoropropylation of six-membered heteroaromatic compounds were achieved as the first examples of a practical benzylic C(sp³) H perfluoroalkylation. In these reactions, BF₂ Cn F_{2n+1} (n=1-3) functioned as both a Lewis acid to activate the benzylic position and a Cn F_{2n+1} (n=1-3) source. The perfluoroalkylation proceeded at both terminal and internal positions of the alkyl chains. Perfluoroalkylated products were obtained in moderate to excellent yields, even on gram scale, and in a sequential procedure without isolation of the intermediates. By using this method, trifluoromethylation of a bioactive compound, as well as introduction of a CF₃ group into a bioactive molecular skeleton, proceeded regioselectively.
 CI - (c) 2015 WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim.
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 LA - eng
 PT - Journal Article
 DEP - 20150729
 PL - Germany
 TA - Angew Chem Int Ed Engl
 JT - Angewandte Chemie (International ed. in English)
 JID - 0370543
 SB - IM
 OTO - NOTNLM
 OT - Lewis acids

OT - arenes
 OT - boranes
 OT - fluorine
 OT - heterocycles
 EDAT- 2015/08/01 06:00
 MHDA- 2015/08/01 06:00
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 PHST- 2015/07/08 [revised]
 PHST- 2015/07/29 [aheadofprint]
 AID - 10.1002/anie.201505335 [doi]
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 SO - Angew Chem Int Ed Engl. 2015 Aug 24;54(35):10263-6. doi: 10.1002/anie.201505335.
 Epub 2015 Jul 29.

PMID- 26037098
 OWN - NLM
 STAT- In-Process
 DA - 20150715
 IS - 1879-1514 (Electronic)
 IS - 0166-445X (Linking)
 VI - 165
 DP - 2015 Aug
 TI - Developmental retardation, reduced fecundity, and modulated expression of the defensome in the intertidal copepod *Tigriopus japonicus* exposed to BDE-47 and PFOS.
 PG - 136-43
 LID - 10.1016/j.aquatox.2015.05.022 [doi]
 LID - S0166-445X(15)00171-X [pii]
 AB - 2,2',4,4'-tetrabromodiphenyl ether (BDE-47) and perfluorooctane sulfonate (PFOS) are widely dispersed persistent organic pollutants (POPs) in the marine ecosystem. However, their toxic effects on marine organisms are still poorly understood. In this study, we investigated the effects of BDE-47 and PFOS on development and reproduction at the organismal level and reactive oxygen species (ROS) production and gene expression patterns of the defensome at the cellular level in the intertidal copepod *Tigriopus japonicus*. In copepods exposed to BDE-47 and PFOS, we observed developmental retardation and reduced fecundity, suggesting repercussions on in vivo endpoints through alterations to the normal molting and reproduction system of *T. japonicus*. BDE-47 and PFOS increased levels of ROS in *T. japonicus* in a concentration-dependent manner, indicating that POPs can induce oxidative stress through the generation of ROS. Additionally, transcript profiles of genes related to detoxification (e.g., CYPs), antioxidant functions (e.g., GST- sigma, catalase, MnSOD), apoptosis (e.g., p53, Rb), and cellular proliferation (e.g., PCNA) were modulated over 72h in response to BDE-47 (120µg/L) and PFOS (1000µg/L). These findings indicate that BDE-47 and PFOS can induce oxidative stress-mediated DNA damage repair systems with transcriptional regulation of detoxification, antioxidant, and apoptosis-related genes, resulting in developmental retardation and reduced fecundity in the copepod *T. japonicus*.

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LA - eng
GR - 5R01ES020921/ES/NIEHS NIH HHS/United States
PT - Journal Article
PT - Research Support, N.I.H., Extramural
PT - Research Support, Non-U.S. Gov't
DEP - 20150527
PL - Netherlands
TA - Aquat Toxicol
JT - Aquatic toxicology (Amsterdam, Netherlands)
JID - 8500246
SB - IM
OTO - NOTNLM
OT - Copepod
OT - Developmental retardation
OT - Persistent organic pollutants
OT - Reactive oxygen species
OT - Reduced fecundity
OT - Tigriopus japonicus
EDAT- 2015/06/04 06:00
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PHST- 2015/04/08 [received]
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PHST- 2015/05/27 [aheadofprint]
AID - S0166-445X(15)00171-X [pii]
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PST - ppublish
SO - Aquat Toxicol. 2015 Aug;165:136-43. doi: 10.1016/j.aquatox.2015.05.022. Epub 2015 May 27.

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OWN - NLM

STAT- Publisher

DA - 20150828

LR - 20150901

IS - 2151-4658 (Electronic)

IS - 2151-464X (Linking)

DP - 2015 Aug 28

TI - Clinical impact of coexisting patellofemoral osteoarthritis in Japanese patients with medial knee osteoarthritis.

LID - 10.1002/acr.22691 [doi]

AB - **OBJECTIVE:** To evaluate the clinical impact of coexisting patellofemoral (PF) osteoarthritis (OA) in Japanese patients with medial tibiofemoral (TF) OA. **METHODS:** Patients with medial knee OA (n = 143) were enrolled. The radiographic severity of the TF and PF joints, anatomical axis angle of the TF joint, patellar alignment, trochlear morphology, patellar height, and passive range of motion (ROM) of the painful knee were evaluated. Additionally, the Japanese Knee Osteoarthritis Measure (JKOM) was also used to investigate the association between the presence of PFOA and clinical symptoms. **RESULTS:** PFOA was present in 98 of 143 patients (68.5%) with medial knee OA. Quantile regression analysis revealed that coexisting PFOA was associated with the pain-related subcategory of the JKOM. Furthermore, multiple logistic regression analysis showed that coexisting PFOA was associated with higher odds of reporting knee pain while ascending (odds ratio [OR]: 4.81; 95% CI: 1.73, 14.3) and descending (OR: 3.86; 95% CI: 1.44, 10.8) stairs. A more varus knee alignment and lower knee flexion ROM, which are features of patients with coexisting PFOA, were associated with knee pain while ascending/descending stairs. However, patellar alignment, trochlear morphology, and patellar height were not significantly associated with knee pain. **CONCLUSION:** PFOA coexisting with medial knee OA was associated with worse clinical symptoms particularly while ascending/descending stairs, although patellar alignment did not contribute to reporting of knee pain. Further studies that include evaluation of PF joint are warranted to develop a basis for an optimal intervention based on compartment involvement. This article is protected by copyright. All rights reserved.

CI - (c) 2015, American College of Rheumatology.

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 LA - ENG
 PT - JOURNAL ARTICLE
 DEP - 20150828
 TA - Arthritis Care Res (Hoboken)
 JT - Arthritis care & research
 JID - 101518086
 EDAT- 2015/09/01 06:00
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 AID - 10.1002/acr.22691 [doi]
 PST - aheadofprint
 SO - Arthritis Care Res (Hoboken). 2015 Aug 28. doi: 10.1002/acr.22691.

 PMID- 26108789
 OWN - NLM

STAT- In-Data-Review

DA - 20150821

IS - 1529-7268 (Electronic)

IS - 0006-3363 (Linking)

VI - 93

IP - 2

DP - 2015 Aug

TI - Involvement of NRF2 in Perfluorooctanoic Acid-Induced Testicular Damage in Male Mice.

PG - 41

LID - 10.1095/biolreprod.115.128819 [doi]

AB - Perfluorooctane acid (PFOA) is a hazardous environmental pollutant that has been reported to exert adverse effects on animal and human health. In this study, male mice were orally administered different concentrations of PFOA (2.5, 5, or 10 mg/kg/day) to evaluate the reproductive toxicity. Exposure to PFOA for 14 consecutive days obviously disrupted seminiferous tubules and reduced sperm count. The highest concentration of PFOA (10 mg/kg/day) caused growth retardation and diminished absolute testis weight. Furthermore, PFOA treatment significantly increased the generation of oxidative stress indicators malondialdehyde and hydrogen peroxide, decreased the expression of transcription factor NRF2, and inhibited the activities of antioxidant enzymes superoxide dismutase and catalase in the testis. Moreover, PFOA exposure up-regulated p-p53 and BAX expression and down-regulated BCL-2 expression in the testis. These results indicated that PFOA-induced male reproductive disorders might be involved in developmental impairment and inhibition of NRF2-mediated antioxidant response in the testis of mice.

CI - (c) 2015 by the Society for the Study of Reproduction, Inc.

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LA - eng

PT - Journal Article

DEP - 20150624

PL - United States

TA - Biol Reprod

JT - Biology of reproduction

JID - 0207224

SB - IM

OTO - NOTNLM

OT - developmental impairment

OT - oxidative stress

OT - perfluorooctane acid

OT - reproductive toxicity

OT - spermatogenesis

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AID - biolreprod.115.128819 [pii]

AID - 10.1095/biolreprod.115.128819 [doi]

PST - ppublish

SO - Biol Reprod. 2015 Aug;93(2):41. doi: 10.1095/biolreprod.115.128819. Epub 2015 Jun 24.

PMID- 26138193

OWN - NLM

STAT- In-Data-Review

DA - 20150727

IS - 1464-3391 (Electronic)

IS - 0968-0896 (Linking)

VI - 23

IP - 15
DP - 2015 Aug 1
TI - Synthesis of new fluorinated analogs of GABA, Pregabalin bioisosteres, and their effects on [(3)H]GABA uptake by rat brain nerve terminals.
PG - 4316-23
LID - 10.1016/j.bmc.2015.06.038 [doi]
LID - S0968-0896(15)00532-5 [pii]
AB - Fluorinated analogs of natural substances take an essential place in the design of new biologically active compounds. New fluorinated analogs of gamma-aminobutyric acid, that is, beta-polyfluoroalkyl-GABAs (FGABAs), were synthesized with substituents: beta-CF₃-beta-OH (1), beta-CF₃ (2); beta-CF₂CF₂H (3). FGABAs are bioisosteres of Pregabalin (Lyrica(R), Pfizer's blockbuster drug, beta-i-Bu-GABA), and have lipophilicity close to this medicine. The effects of synthesized FGABAs on [(3)H]GABA uptake by isolated rat brain nerve terminals (synaptosomes) were assessed and compared with those of Pregabalin. FGABAs 1-3 (100μM) did not influence the initial velocity of [(3)H]GABA uptake when applied acutely, whereas an increase in this parameter was found after preliminary incubation of FGABAs with synaptosomes. Pregabalin after preliminary incubation with synaptosomes caused unidirectional changes in the initial velocity of [(3)H]GABA uptake. Using specific inhibitors of GAT1 and GAT3, NO-711 and SNAP5114, respectively, the ability of FGABAs 1-3 to influence non-GAT1 and non-GAT3 uptake activity of nerve terminals was analyzed, but no specificity was found. Therefore, new synthesized FGABAs are structural but not functional analogs of GABA (because they did not inhibit synaptosomal [(3)H]GABA uptake). Moreover, FGABAs are able to increase the initial velocity of [(3)H]GABA uptake by synaptosomes, and this effect is higher than that of Pregabalin.
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 LA - eng
 PT - Journal Article
 DEP - 20150619
 PL - England
 TA - Bioorg Med Chem
 JT - Bioorganic & medicinal chemistry
 JID - 9413298
 SB - IM
 OTO - NOTNLM
 OT - Fluorinated analogs of gamma-aminobutyric acid (beta-polyfluoroalkyl-GABAs)
 OT - Lyrica
 OT - Pregabalin
 OT - Rat brain nerve terminals
 OT - [(3)H]GABA uptake
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 AID - S0968-0896(15)00532-5 [pii]
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 PST - ppublish
 SO - Bioorg Med Chem. 2015 Aug 1;23(15):4316-23. doi: 10.1016/j.bmc.2015.06.038. Epub 2015 Jun 19.

 PMID- 26300304
 OWN - NLM
 STAT- Publisher
 DA - 20150915
 LR - 20150915
 IS - 1872-7786 (Electronic)
 IS - 0009-2797 (Linking)
 VI - 240
 DP - 2015 Aug 20
 TI - In vivo immunotoxicity of perfluorooctane sulfonate in BALB/c mice:

Identification of T-cell receptor and calcium-mediated signaling pathway disruption through gene expression profiling of the spleen.

PG - 84-93

LID - S0009-2797(15)30029-6 [pii]

LID - 10.1016/j.cbi.2015.07.015 [doi]

AB - Perfluorooctane sulfonate (PFOS) is a persistent organic pollutant that is used worldwide and is continuously being detected in biota and the environment, thus presenting potential threats to the ecosystem and human health. Although PFOS is highly immunotoxic, its underlying molecular mechanisms remain largely unknown. The present study examined PFOS-induced immunotoxicity in the mouse spleen and explored its underlying mechanisms by gene expression profiling. Oral exposure of male BALB/c mice for three weeks followed by one-week recovery showed that a 10 mg/kg/day PFOS exposure damaged the splenic architecture, inhibited T-cell proliferation in response to mitogen, and increased the percentages of T helper (CD3+CD4+) and cytotoxic T (CD3+CD8+) cells, despite the decrease in the absolute number of these cells. A delayed type of PFOS immunotoxicity was observed, which mainly occurred during the recovery period. Global gene expression profiling of mouse spleens and QRT-PCR analyses suggest that PFOS inhibited the expression of genes involved in cell cycle regulation and NRF2-mediated oxidative stress response, and upregulated those in TCR signaling, calcium signaling, and p38/MAPK signaling pathways. Western blot analysis confirmed that the expressions of CAMK4, THEMIS, and CD3G, which were involved in the upregulated pathways, were induced upon PFOS exposure. Acute PFOS exposure modulated calcium homeostasis in splenocytes. These results indicate that PFOS exposure can activate TCR signaling and calcium ion influx, which provides a clue for the potential mechanism of PFOS immunotoxicity. The altered signaling pathways by PFOS treatment as revealed in the present study might facilitate in better understanding PFOS immunotoxicity and explain the association between immune disease and PFOS exposure.

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LA - ENG

PT - JOURNAL ARTICLE

DEP - 20150820

TA - Chem Biol Interact

JT - Chemico-biological interactions

JID - 0227276

OTO - NOTNLM

OT - Calcium ion influx

OT - Gene expression profile

OT - Immunotoxicity

OT - PFOS

OT - T-cell receptor signaling

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AID - S0009-2797(15)30029-6 [pii]

AID - 10.1016/j.cbi.2015.07.015 [doi]

PST - aheadofprint

SO - Chem Biol Interact. 2015 Aug 20;240:84-93. doi: 10.1016/j.cbi.2015.07.015.

PMID- 26214272

OWN - NLM

STAT- In-Data-Review

DA - 20150818

IS - 1364-548X (Electronic)

IS - 1359-7345 (Linking)

VI - 51

IP - 70

DP - 2015 Aug 18

TI - Immobilization of a molecular cobalt electrocatalyst by hydrophobic interaction with a hematite photoanode for highly stable oxygen evolution.

PG - 13481-4

LID - 10.1039/c5cc05681k [doi]

AB - A unique modification of a hematite photoanode with perfluorinated

Co-phthalocyanine (CoFPc) by strong binding associated with hydrophobic interaction is demonstrated. The resultant molecular electrocatalyst - a hematite photoanode hybrid material showed a significant onset shift and high stability for the photoelectrochemical oxidation evolution reaction (OER).

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LA - eng

PT - Journal Article

PL - England

TA - Chem Commun (Camb)

JT - Chemical communications (Cambridge, England)

JID - 9610838

SB - IM

EDAT- 2015/07/28 06:00

MHDA- 2015/07/28 06:00

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AID - 10.1039/c5cc05681k [doi]

PST - ppublish

SO - Chem Commun (Camb). 2015 Aug 18;51(70):13481-4. doi: 10.1039/c5cc05681k.

PMID- 26177718

OWN - NLM

STAT- In-Data-Review

DA - 20150724

IS - 1521-3765 (Electronic)

IS - 0947-6539 (Linking)

VI - 21

IP - 32

DP - 2015 Aug 3

TI - Monitoring Glycan-Protein Interactions by NMR Spectroscopic Analysis: A Simple Chemical Tag That Mimics Natural CH-pi Interactions.

PG - 11408-16

LID - 10.1002/chem.201501248 [doi]

AB - Detection of molecular recognition processes requires robust, specific, and easily implementable sensing methods, especially for screening applications. Here, we propose the difluoroacetamide moiety (an acetamide bioisoster) as a novel tag for detecting by NMR analysis those glycan-protein interactions that

involve N-acetylated sugars. Although difluoroacetamide has been used previously as a substituent in medicinal chemistry, here we employ it as a specific sensor to monitor interactions between GlcNAc-containing glycans and a model lectin (wheat germ agglutinin). In contrast to the widely employed trifluoroacetamide group, the difluoroacetamide tag contains geminal (1) H and (19) F atoms that allow both (1) H and (19) F NMR methods for easy and robust detection of molecular recognition processes involving GlcNAc- (or GalNAc-) moieties over a range of binding affinities. The CHF₂ CONH- moiety behaves in a manner that is very similar to that of the natural acetamide fragment in the involved aromatic-sugar interactions, providing analogous binding energy and conformations, whereas the perfluorinated CF₃ CONH- analogue differs more significantly.

CI - (c) 2015 WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim.

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LA - eng

PT - Journal Article

DEP - 20150714

PL - Germany

TA - Chemistry

JT - Chemistry (Weinheim an der Bergstrasse, Germany)

JID - 9513783

SB - IM

OTO - NOTNLM

OT - NMR spectroscopy

OT - fluorine

OT - molecular modeling

OT - molecular recognition

OT - noncovalent interactions

EDAT- 2015/07/17 06:00

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PHST- 2015/03/30 [received]

PHST- 2015/07/14 [aheadofprint]

AID - 10.1002/chem.201501248 [doi]

PST - ppublish

SO - Chemistry. 2015 Aug 3;21(32):11408-16. doi: 10.1002/chem.201501248. Epub 2015 Jul 14.

PMID- 26189958

OWN - NLM

STAT- In-Data-Review

DA - 20150819

IS - 1521-3765 (Electronic)

IS - 0947-6539 (Linking)

VI - 21

IP - 35

DP - 2015 Aug 24

TI - CF Activation in Perfluorinated Arenes with Isonitriles under UV-Light Irradiation.

PG - 12295-8

LID - 10.1002/chem.201502298 [doi]

AB - Due to the great value of fluorinated arenes in agrochemistry, medicinal chemistry and materials science, development of methods for preparation of fluorinated arenes is of high importance. They can be either accessed by arene fluorination or by partial arene defluorination. However, the carbonfluorine bond

belongs to the strongest sigma-bonds, which renders CF activation highly challenging. Here it is shown that aryl and alkyl isonitriles efficiently activate the strong CF bond in perfluoroarenes by simple UV irradiation under mild conditions. Reactions proceed by formal direct insertion of the isonitrile into the CF bond without any transition metal. Activation occurs at arene CF bonds whereas aliphatic CF bonds remain unreacted. For selected perfluoroarenes CF activation occurs with high regioselectivity and resulting imidoyl fluorides are transformed into other valuable compounds. Theoretical studies give insights into the reaction mechanism.

CI - (c) 2015 WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim.

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LA - eng

PT - Journal Article

DEP - 20150717

PL - Germany

TA - Chemistry

JT - Chemistry (Weinheim an der Bergstrasse, Germany)

JID - 9513783

SB - IM

OTO - NOTNLM

OT - CF activation

OT - fluorine

OT - perfluoroarene

OT - photochemistry

OT - transition-metal free

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 AID - 10.1002/chem.201502298 [doi]
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PMID- 26178437
 OWN - NLM
 STAT- In-Data-Review
 DA - 20150819
 IS - 1521-3765 (Electronic)
 IS - 0947-6539 (Linking)
 VI - 21
 IP - 35
 DP - 2015 Aug 24
 TI - Functionalized Pentafluoroethylphosphanes.
 PG - 12326-36
 LID - 10.1002/chem.201501733 [doi]
 AB - Bis(diethylamino)pentafluoroethylphosphane represents a versatile starting material for the synthesis of functionalized pentafluoroethylphosphanes. Perfluoroalkyl substituted aminophosphanes themselves already exhibit interesting coordination properties and were treated with the catalytically relevant salts PtCl₂ and PdCl₂ affording trans-[Cl₂ M{P(C₂ F₅) (NEt₂)₂ }₂]. The hitherto unknown (C₂ F₅)PBr₂, accessible in good yields by treatment of C₂ F₅ P(NEt₂)₂ with HBr, was smoothly transformed into the corresponding phosphane, C₂ F₅ PH₂, or fluoro derivative, C₂ F₅ PF₂. Acidic hydrolysis of C₂ F₅ P(NEt₂)₂ yielded the phosphinic acid C₂ F₅ P(O)(OH)H, the anion of which was structurally characterized. The phosphinic acid smoothly adds to the carbonyl group of acetone under PC bond formation. An analogous reaction with aldehydes, for example, salicyl aldehyde, offers the possibility to generate stereocenters.

CI - (c) 2015 WILEY-VCH Verlag GmbH & Co. KGaA, Weinheim.
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LA - eng

PT - Journal Article

DEP - 20150714

PL - Germany

TA - Chemistry

JT - Chemistry (Weinheim an der Bergstrasse, Germany)

JID - 9513783

SB - IM

OTO - NOTNLM

OT - fluorine

OT - functionalization

OT - phosphinic acid

OT - phosphorus

OT - transition metals

EDAT- 2015/07/17 06:00

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PHST- 2015/07/14 [aheadofprint]

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SO - Chemistry. 2015 Aug 24;21(35):12326-36. doi: 10.1002/chem.201501733. Epub 2015
 Jul 14.

PMID- 25863705

OWN - NLM

STAT- In-Process

DA - 20150511

IS - 1879-1298 (Electronic)

IS - 0045-6535 (Linking)

VI - 133

DP - 2015 Aug

TI - Maternal and paternal serum concentrations of perfluoroalkyl and polyfluoroalkyl
 substances and the secondary sex ratio.

PG - 31-40

LID - 10.1016/j.chemosphere.2015.03.015 [doi]

LID - S0045-6535(15)00215-5 [pii]

AB - Select persistent environmental chemicals have been associated with a reduction
 in the secondary sex ratio (SSR), or the ratio of male to female live births. We
 evaluated preconception maternal, paternal, and couple serum concentrations of
 perfluoroalkyl and polyfluoroalkyl substances (PFASs) in relation to the SSR,
 given the absence of previous investigation. Two hundred thirty-three couples
 from Michigan and Texas were enrolled prior to conception and prospectively
 followed through delivery of a singleton birth, 2005-2009. Maternal and paternal
 serum concentrations (ng mL⁻¹) were measured at baseline for seven PFASs.

Logistic regression models were used to estimate odds ratios (ORs) and 95% confidence intervals (CIs) for a male birth, after adjusting for potential confounders. When maternal and paternal PFAS concentrations were modeled jointly, five of the seven PFASs, including the two most prominent PFASs, perfluorooctane sulfonic acid and perfluorooctanoic acid, were not significantly associated with the SSR. However, paternal N-methyl-perfluorooctane sulfonamidoacetic acid (MeFOSAA) and perfluorononanoic acid (2nd versus 1st tertile, OR, 0.43, 95% CI, 0.21-0.88) were significantly associated with an excess of female births. Meanwhile, a dose-response relation was observed only for paternal MeFOSAA (2nd versus 1st tertile, OR, 0.53, 95% CI, 0.26-1.10; 3rd versus 1st tertile, OR, 0.34, 95% CI, 0.13-0.89). This study suggests a possible dose-response relation between a less prevalent PFAS and a reversal in the SSR, though the underlying mechanisms remain unknown and the findings await corroboration to eliminate other explanations including chance.

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LA - eng

GR - #N01-HD-3-3355/HD/NICHD NIH HHS/United States

GR - N01-HD-3-3356/HD/NICHD NIH HHS/United States

GR - N01-HD-3-3358/HD/NICHD NIH HHS/United States

PT - Journal Article

PT - Research Support, N.I.H., Extramural

PT - Research Support, Non-U.S. Gov't

DEP - 20150402

PL - England
 TA - Chemosphere
 JT - Chemosphere
 JID - 0320657
 SB - IM
 OTO - NOTNLM
 OT - Endocrine disruptors
 OT - Fertility
 OT - Maternal exposure
 OT - Paternal exposure
 OT - Perfluoroalkyl and polyfluoroalkyl substances
 OT - Sex ratio
 EDAT- 2015/04/13 06:00
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 PHST- 2014/10/31 [received]
 PHST- 2015/02/28 [revised]
 PHST- 2015/03/08 [accepted]
 PHST- 2015/04/02 [aheadofprint]
 AID - S0045-6535(15)00215-5 [pii]
 AID - 10.1016/j.chemosphere.2015.03.015 [doi]
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 SO - Chemosphere. 2015 Aug;133:31-40. doi: 10.1016/j.chemosphere.2015.03.015. Epub
 2015 Apr 2.

 PMID- 25829055
 OWN - NLM
 STAT- In-Process
 DA - 20150511
 IS - 1879-1298 (Electronic)
 IS - 0045-6535 (Linking)
 VI - 133
 DP - 2015 Aug
 TI - Demographic, behavioral, dietary, and socioeconomic characteristics related to
 persistent organic pollutants and mercury levels in pregnant women in Japan.
 PG - 13-21
 LID - 10.1016/j.chemosphere.2015.02.062 [doi]
 LID - S0045-6535(15)00186-1 [pii]
 AB - Persistent organic pollutants and mercury are known environmental chemicals that
 have been found to be ubiquitous in not only the environment but also in humans,
 including women of reproductive age. The purpose of this study was to evaluate
 the association between personal lifestyle characteristics and environmental
 chemical levels during the perinatal period in the general Japanese population.
 This study targeted 322 pregnant women enrolled in the Hokkaido Study on
 Environment and Children's Health. Each participant completed a self-administered
 questionnaire and a food-frequency questionnaire to obtain relevant information
 on parental demographic, behavioral, dietary, and socioeconomic characteristics.
 In total, 58 non-dioxin-like polychlorinated biphenyls, 17 dibenzo-p-dioxins and

-dibenzofuran, and 12 dioxin-like polychlorinated biphenyls congeners, perfluorooctane sulfonate, perfluorooctanoic acid, and mercury were measured in maternal samples taken during the perinatal period. Linear regression models were constructed against potential related factors for each chemical concentration. Most concentrations of environmental chemicals were correlated with the presence of other environmental chemicals, especially in the case of non-dioxin-like polychlorinated biphenyls and, polychlorinated dibenzo-p-dioxins and -dibenzofurans and dioxin-like polychlorinated biphenyls which had similar exposure sources and persistence in the body. Maternal smoking and alcohol habits, fish and beef intake and household income were significantly associated with concentrations of environmental chemicals. These results suggest that different lifestyle patterns relate to varying exposure to environmental chemicals.

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LA - eng
PT - Journal Article
PT - Research Support, Non-U.S. Gov't
DEP - 20150328
PL - England
TA - Chemosphere
JT - Chemosphere
JID - 0320657
SB - IM
OTO - NOTNLM
OT - Biomarkers
OT - Mercury
OT - POPs
OT - Persistent organic pollutants
OT - Pregnant women
EDAT- 2015/04/02 06:00
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PST - ppublish
SO - Chemosphere. 2015 Aug;133:13-21. doi: 10.1016/j.chemosphere.2015.02.062. Epub 2015 Mar 28.

PMID- 25770831
OWN - NLM
STAT- In-Process
DA - 20150518
IS - 1879-1298 (Electronic)
IS - 0045-6535 (Linking)
VI - 132
DP - 2015 Aug
TI - Connexin 43 mediates PFOS-induced apoptosis in astrocytes.
PG - 8-16
LID - 10.1016/j.chemosphere.2015.02.041 [doi]
LID - S0045-6535(15)00155-1 [pii]
AB - Perfluorooctane sulfonate (PFOS) is a man-made environmental pollutant that is toxic to mammals. However, the neurotoxic effects of PFOS remain largely unexplored. In this study, we determined the role of an astrocyte specific gap junction protein, connexin 43 (Cx43), in PFOS-induced apoptosis. The rate of astrocyte apoptosis was higher in cortex astrocytes after PFOS treatment. These astrocytes also showed up-regulated expression of Cx43 and higher levels of cleaved caspase-3. Elevated ROS accumulation and decreased DeltaPsim also confirmed the presence of PFOS-induced apoptosis. However, the exposure of astrocytes to PFOS together with carbenoxolone (CBX) significantly reduced both Cx43 and cleaved caspase-3 levels. These results indicate that Cx43 plays a proapoptotic role in PFOS-induced apoptosis in cortex astrocyte cells.
CI - Copyright (c) 2015 Elsevier Ltd. All rights reserved.
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PT - Journal Article

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DEP - 20150313

PL - England

TA - Chemosphere

JT - Chemosphere

JID - 0320657

SB - IM

OTO - NOTNLM

OT - Apoptosis

OT - Connexin 43

OT - Neurotoxicity

OT - Perfluorooctane sulfonate

OT - Reactive oxygen species

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PST - ppublish

SO - Chemosphere. 2015 Aug;132:8-16. doi: 10.1016/j.chemosphere.2015.02.041. Epub 2015
Mar 13.

PMID- 25820534
 OWN - NLM
 STAT- In-Data-Review
 DA - 20150725
 IS - 1520-636X (Electronic)
 IS - 0899-0042 (Linking)
 VI - 27
 IP - 8
 DP - 2015 Aug
 TI - Synthesis of a Fluorine-Containing Cis-Cisoidal One-Handed Helical Polyphenylacetylene and Application of Highly Selective Photocyclic Aromatization Product on Oxygen Permselective Membrane.
 PG - 459-63
 LID - 10.1002/chir.22441 [doi]
 AB - A novel phenylacetylene monomer having a perfluorinated alkyl group () was synthesized and polymerized in a chiral catalytic system to yield a one-handed helical polymer. The ability and efficiency of the chiral induction of the fluorine-containing monomer in the helix-sense-selective polymerization (HSSP) was much higher than those of a monomer having the corresponding alkyl group () we reported before. The resulting polymer showed cis-cisoidal one-handed helical conformation, and was suitable for highly selective photocyclic aromatization (SCAT) to give a 2D surface modifier (). Oxygen permselectivity through a base polymer membrane was highly enhanced from 1.83 to 2.36 by adding a small amount (1-5 wt%) of the 2D surface modifier . The improvement was thought to be caused by improvement of solution selectivity on the membrane surface which the 2D surface modifier effectively covered. Chirality 27:459-463, 2015. (c) 2015 Wiley Periodicals, Inc.
 CI - (c) 2015 Wiley Periodicals, Inc.
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LA - eng

PT - Journal Article

DEP - 20150328

PL - United States

TA - Chirality

JT - Chirality

JID - 8914261

SB - IM

OTO - NOTNLM

OT - SCAT

OT - helix-sense-selective polymerization

OT - oxygen/nitrogen

OT - permselectivity

OT - phenylacetylene

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SO - Chirality. 2015 Aug;27(8):459-63. doi: 10.1002/chir.22441. Epub 2015 Mar 28.

PMID- 26330949

OWN - NLM

STAT- In-Data-Review

DA - 20150902

LR - 20150905

IS - 2005-4408 (Electronic)

IS - 2005-291X (Linking)

VI - 7

IP - 3

DP - 2015 Sep

TI - Comparison of the Sliding and Femoral Head Rotation among Three Different Femoral Head Fixation Devices for Trochanteric Fractures.

PG - 291-7

LID - 10.4055/cios.2015.7.3.291 [doi]

AB - BACKGROUND: Recently, various femoral head fixation devices (HFDs) for trochanteric fractures have become available. However, there are some cases in which femoral head rotation with excessive sliding of the HFD is observed and it is often followed by cutout. The purpose of this study is to compare the ability

of the three types of HFDs to prevent femoral head rotation. METHODS: Between July 2005 and December 2009, 206 patients aged over 60 years with trochanteric fractures who had undergone surgical treatment using a short femoral nail in our institution were enrolled into the study. We used the gamma 3 nail (GMN) as the screw-type HFD in 66 cases, the gliding nail (GLN) as a non-cylindrical blade in 76 cases, and the proximal femoral nail antirotation (PFNA) as a cylindrical blade in 64 cases. The sliding length of HFDs and the occurrence of femoral head rotation were evaluated by assessing radiographs as the main outcome, and the results were compared among these devices. RESULTS: A comparison of the degree of sliding in the GMN group showed that femoral head rotation was observed significantly more frequently in cases with rotation. Further, it appeared that femoral head rotation occurred more frequently in comminuted fractures. However, no significant differences between the sliding lengths of the different HFDs were observed among three groups. Femoral head rotation was observed in 15 cases of GMN (22.7%), 0 case of GLN, and 5 case of PFNA (7.8%). Significant differences with regard to the occurrence of femoral head rotation were observed among the three groups. Furthermore, significant differences were also observed between GLN and PFNA with respect to the occurrence of femoral head rotation. CONCLUSIONS: The ability to stabilize femoral head appears to be greater with blade-type materials than with screw-type materials. Furthermore, we believe that a non-cylindrical blade is preferable to a cylindrical blade for the surgical treatment of comminuted, unstable trochanteric fractures in order to prevent femoral head rotation and cut-out.

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LA - eng
PT - Journal Article
DEP - 20150813
PL - Korea (South)
TA - Clin Orthop Surg
JT - Clinics in orthopedic surgery
JID - 101505087
SB - IM
PMC - PMC4553275
OID - NLM: PMC4553275
OTO - NOTNLM
OT - Femur head
OT - Hip fractures
OT - Orthopedic fixation devices
OT - Postoperative complication
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PMID- 25809098
OWN - NLM
STAT- In-Data-Review
DA - 20150803
LR - 20150815
IS - 1552-9924 (Electronic)
IS - 0091-6765 (Linking)
VI - 123
IP - 8
DP - 2015 Aug
TI - Anthropometry in 5- to 9-Year-Old Greenlandic and Ukrainian Children in Relation to Prenatal Exposure to Perfluorinated Alkyl Substances.
PG - 841-6
LID - 10.1289/ehp.1408881 [doi]
AB - BACKGROUND: In some animal studies, perfluorinated alkyl substances are suggested to induce weight gain. Human epidemiological studies investigating these associations are sparse. OBJECTIVE: We examined pregnancy serum concentrations of perfluorooctanoate (PFOA) and perfluorooctane sulfonate (PFOS) and the prevalence of offspring overweight (> 1 SD) and waist-to-height ratio (WHtR) > 0.5 at 5-9 years of age. METHODS: Sera from 1,022 pregnant women enrolled in the INUENDO cohort (2002-2004) from Greenland and Kharkiv (Ukraine) were analyzed for PFOA

and PFOS using liquid chromatography-tandem mass spectrometry. Relative risks (RR) of being overweight and having WHtR > 0.5 in relation to continuous and categorized (tertiles) PFOA and PFOS were calculated at follow-up (2010-2012) using generalized linear models. RESULTS: Pooled PFOA median (range) was 1.3 (0.2-5.1) and PFOS median (range) was 10.8 (0.8-73.0) ng/mL. For each natural logarithm-unit (ln-unit) increase of pregnancy PFOA, the adjusted RR of offspring overweight was 1.11 [95% confidence interval (CI): 0.82, 1.53] in Greenlandic children. In Ukrainian children, the adjusted RR of offspring overweight was 1.02 (95% CI: 0.72, 1.44) for each ln-unit increase of pregnancy PFOA. Prenatal exposure to PFOS was not associated with overweight in country-specific or pooled analysis. The adjusted RR of having WHtR > 0.5 for each ln-unit increase of prenatal exposure to PFOA was 1.30 (95% CI: 0.97, 1.74) in the pooled analysis. For 1-ln-unit increase of prenatal exposure to PFOS, the adjusted RR of having a WHtR > 0.5 was 1.38 (95% CI: 1.05, 1.82) in the pooled analysis. CONCLUSIONS: The results indicate that prenatal PFOA and PFOS exposures may be associated with child waist-to-height ratio > 0.5. Prenatal PFOA and PFOS exposures were not associated with overweight. CITATION: Hoyer BB, Ramlau-Hansen CH, Vrijheid M, Valvi D, Pedersen HS, Zvezdai V, Jonsson BA, Lindh CH, Bonde JP, Toft G. 2015. Anthropometry in 5- to 9-year-old Greenlandic and Ukrainian children in relation to prenatal exposure to perfluorinated alkyl substances. Environ Health Perspect 123:841-846; <http://dx.doi.org/10.1289/ehp.1408881>.

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FAU - Toft, Gunnar

AU - Toft G

LA - eng

PT - Journal Article

DEP - 20150326

PL - United States

TA - Environ Health Perspect

JT - Environmental health perspectives
JID - 0330411
SB - IM
PMC - PMC4529015
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PHST- 2015/03/26 [aheadofprint]
AID - 10.1289/ehp.1408881 [doi]
PST - ppublish
SO - Environ Health Perspect. 2015 Aug;123(8):841-6. doi: 10.1289/ehp.1408881. Epub 2015 Mar 26.

PMID- 26292060
OWN - NLM
STAT- In-Data-Review
DA - 20150914
IS - 1873-6750 (Electronic)
IS - 0160-4120 (Linking)
VI - 84
DP - 2015 Nov
TI - Human exposure to endocrine disrupting chemicals and fertility: A case-control study in male subfertility patients.
PG - 154-60
LID - 10.1016/j.envint.2015.07.017 [doi]
LID - S0160-4120(15)30022-2 [pii]
AB - BACKGROUND: Dioxins, PCBs, chlorinated pesticides, brominated flame retardants, bisphenol A, triclosan, perfluorinated compounds and phthalates are known as endocrine disrupting chemicals (EDCs). OBJECTIVES: The aim of our study was to investigate whether higher exposure to EDCs is associated with increased subfertility in men. METHODS: We measured biomarkers of exposure in 163 men, recruited through four fertility clinics. According to WHO guidelines, we used a total motility count (TMC) of 20 million as cut-off value. We assigned patients to the case group when two semen samples - collected at least one week apart - had a TMC<20 and to the control group when both samples had a TMC>=20. To estimate the risk of subfertility and alteration in sex hormone concentrations we used multivariable-adjusted analysis, using logistic and linear regressions, respectively. RESULTS: For an IQR increase in serum oxychlordan, the odds ratio for subfertility was 1.98 (95% CI: 1.07; 3.69). Furthermore, men with serum levels of BDE209 above the quantification limit had an odds of 7.22 (1.03; 50.6) for subfertility compared with those having values below the LOQ. Urinary levels of phthalates and triclosan were negatively associated with inhibin B and positively with LH. Urinary bisphenol A correlated negatively with testosterone levels. CONCLUSIONS: Our study in men showed that internal body concentrations of endocrine disrupting chemicals are associated with an increased risk of

subfertility together with alterations in hormone levels. The results emphasize the importance to reduce chemicals in the environment in order to safeguard male fertility.

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LA - eng

PT - Journal Article
 DEP - 20150824
 PL - Netherlands
 TA - Environ Int
 JT - Environment international
 JID - 7807270
 SB - IM
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 PHST- 2015/07/20 [accepted]
 PHST- 2015/08/24 [aheadofprint]
 AID - S0160-4120(15)30022-2 [pii]
 AID - 10.1016/j.envint.2015.07.017 [doi]
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 DA - 20150823
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 IS - 1873-6750 (Electronic)
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 VI - 85
 DP - 2015 Aug 19
 TI - Exploring the fate, transport and risk of Perfluorooctane Sulfonate (PFOS) in a coastal region of China using a multimedia model.
 PG - 15-26
 LID - S0160-4120(15)30035-0 [pii]
 LID - 10.1016/j.envint.2015.08.007 [doi]
 AB - Perfluorooctane Sulfonate (PFOS) and related substances have been widely applied in both industrial processes and domestic products in China. Exploring the environmental fate and transport of PFOS using modeling methods provides an important link between emission and multimedia diffusion which forms a vital part in the human health risk assessment and chemical management for these substances. In this study, the gridded fugacity based BETR model was modified to make it more suitable to model transfer processes of PFOS in a coastal region, including changes to PFOS partition coefficients to reflect the influence of water salinity on its sorption behavior. The fate and transport of PFOS in the Bohai coastal region of China were simulated under steady state with the modified version of the model. Spatially distributed emissions of PFOS and related substances in 2010 were estimated and used in these simulations. Four different emission scenarios were investigated, in which a range of half-lives for PFOS related substances were considered. Concentrations of PFOS in air, vegetation, soil, fresh water,

fresh water sediment and coastal water were derived from the model under the steady-state assumption. The median modeled PFOS concentrations in fresh water, fresh water sediment and soil were 7.20ng/L, 0.39ng/g and 0.21ng/g, respectively, under Emission Scenario 2 (which assumed all PFOS related substances immediately degrade to PFOS) for the whole region, while the maximum concentrations were 47.10ng/L, 4.98ng/g and 2.49ng/g, respectively. Measured concentration data for PFOS in the Bohai coastal region around the year of 2010 were collected from the literature. The reliability of the model results was evaluated by comparing the range of modeled concentrations with the measured data, which generally matched well for the main compartments. Fate and transfer fluxes were derived from the model based on the calculated inventory within the compartments, transfer fluxes between compartments and advection fluxes between sub-regions. It showed that soil and costal water were likely to be the most important sinks of PFOS in the Bohai costal region, in which more than 90% of PFOS was stored. Flows of fresh water were the driving force for spatial transport of PFOS in this region. Influences of the seasonal change of fresh water fluxes on the model results were also analyzed. When only seasonal changes of the fresh water flow rates were considered, concentrations of PFOS in winter and spring were predicted to be higher than that under annual average conditions, while the concentrations in summer and autumn were lower. For PFOS fluxes entering the sea, opposite conclusions were drawn compared to the concentrations. Environmental risks from the presence of PFOS in fresh water were assessed for this region through comparison with available water quality criteria values. The predicted concentrations of PFOS in the Bohai coastal region provided by the model were lower than the water quality criteria published by the United States Environmental Protection Agency and Chinese researchers, while the concentrations in more than 80% of the sampling locations exceeded the European Union Water Framework Directive Environmental Quality Standards values. Seasonal variations of flow rate might cause a significant increase in environmental risks.

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PT - JOURNAL ARTICLE

DEP - 20150819

TA - Environ Int

JT - Environment international

JID - 7807270

OTO - NOTNLM

OT - Bohai coastal region

OT - Environmental risk

OT - Fugacity based gridded model

OT - Multimedia transportation

OT - Perfluorooctane Sulfonate (PFOS)

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DA - 20150830

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VI - 206

DP - 2015 Aug 27

TI - Facilitated bioaccumulation of perfluorooctanesulfonate in zebrafish by nano-TiO in two crystalline phases.

PG - 644-651

LID - S0269-7491(15)30026-9 [pii]

LID - 10.1016/j.envpol.2015.08.032 [doi]

AB - Zebrafish were placed in the upper layer of aquariums to investigate the impacts of anatase and rutile nano-TiO₂ on perfluorooctanesulfonate (PFOS) bioaccumulation in zebrafish. Both variations of particle hydrodynamic size and concentration in water column suggest that anatase was better dispersed than

rutile. PFOS could be significantly adsorbed on nano-TiO₂ to form TiO₂-PFOS complexes, leading to reduced concentration of PFOS in upper layer. Due to enhanced exposure to PFOS by ingestion and adhesion of TiO₂-PFOS complexes, the whole-body PFOS concentration in zebrafish was enhanced by 59.0% (95% CI: 55.9%, 61.9%) and 25.4% (95% CI: 24.8%, 25.6%) in the presence of anatase and rutile nano-TiO₂ after equilibrium compared with the control with PFOS alone. The bioaccumulation of PFOS was much more promoted by anatase, which was attributed by greater adsorption capacity of PFOS to anatase, slower migration of their complex in water column, and slower elimination rate of anatase from fish.

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LA - ENG

PT - JOURNAL ARTICLE

DEP - 20150827

TA - Environ Pollut
 JT - Environmental pollution (Barking, Essex : 1987)
 JID - 8804476
 OTO - NOTNLM
 OT - Anatase nano-TiO(2)
 OT - Bioaccumulation
 OT - PFOS
 OT - Rutile nano-TiO(2)
 OT - Zebrafish
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 IS - 1873-6424 (Electronic)
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 VI - 206
 DP - 2015 Aug 21
 TI - Accumulation and phytotoxicity of perfluorooctanoic acid in the model plant species *Arabidopsis thaliana*.
 PG - 560-566
 LID - S0269-7491(15)00398-X [pii]
 LID - 10.1016/j.envpol.2015.07.050 [doi]
 AB - Perfluorooctanoic acid (PFOA) is widely used in the manufacture of many industrial and household products. To assess the potential environmental risk of PFOA, its accumulation, translocation and phytotoxic effects were investigated using the model plant species *Arabidopsis thaliana*. Exposure to 18 µM PFOA-F in agar plates did not affect plant growth, but 181-1811 µM PFOA-F inhibited root and shoot growth. PFOA was more phytotoxic on shoot growth than NaF at the equivalent F concentration, with the latter having 3.9-7.6 times higher EC50 for shoot biomass than PFOA. PFOA was efficiently translocated from roots to shoots, where it existed as intact PFOA molecules without transformation evidenced by the ¹⁹F NMR spectra. PFOA caused a significant increase in the concentration of H2O2 and malondialdehyde (MDA) in shoots, indicating that oxidative stress is a likely cause of PFOA phytotoxicity.
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 LA - ENG
 PT - JOURNAL ARTICLE
 DEP - 20150821
 TA - Environ Pollut
 JT - Environmental pollution (Barking, Essex : 1987)
 JID - 8804476
 OTO - NOTNLM
 OT - (19)F NMR
 OT - Arabidopsis thaliana
 OT - Fluoride
 OT - Oxidative stress
 OT - Perfluorooctanoic acid
 OT - Phytotoxicity
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 AID - S0269-7491(15)00398-X [pii]
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 PMID- 26257032
 OWN - NLM
 STAT- Publisher
 DA - 20150810
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 IS - 1096-0953 (Electronic)
 IS - 0013-9351 (Linking)
 VI - 142

DP - 2015 Aug 6

TI - Transfer of perfluoroalkyl substances from mother to fetus in a Spanish birth cohort.

PG - 471-478

LID - S0013-9351(15)30041-4 [pii]

LID - 10.1016/j.envres.2015.07.020 [doi]

AB - INTRODUCTION: Prenatal exposure to perfluoroalkyl substances (PFAS) might affect child health; thus estimating PFAS fetal burden is relevant. PFAS fetal burden is best estimated in cord samples; previous studies have used either maternal plasma or serum during pregnancy as proxy, but their validity is not clear. We aimed to evaluate PFAS transfer between mother and fetus and determine its predictors in a Spanish birth cohort. METHODS: We measured perfluorobutane sulfonate (PFBS), perfluorohexane sulfonate (PFHxS), perfluorooctane sulfonate (PFOS), perfluorooctanoate (PFOA), and perfluorononanoate (PFNA) in maternal blood and cord serum from 66 mother-child pairs. We used Spearman's rank coefficients to correlate PFAS concentrations in first trimester maternal plasma and serum, with cord serum samples. We assessed PFAS placental transfer by calculating maternal to cord ratios and examined their association with maternal socio-demographic characteristics and child sex using linear regression models. RESULTS: Median concentrations of PFAS (ng/mL) of PFHxS, PFOS, PFOA, and PFNA in maternal plasma (0.79, 6.18, 2.85 and 0.84, respectively) and serum (0.84, 6.99, 2.97 and 0.85) were higher than in cord serum (0.40, 1.86, 1.90 and 0.32). PFBS was not detected. Positive Spearman's correlations (p-values<0.001) were found between maternal plasma and serum (≥ 0.80), maternal plasma and cord (≥ 0.66), and maternal serum and cord samples (≥ 0.67). Maternal plasma to cord ratios were above 1 (PFHxS: 2.35 [95%CI: 2.05, 2.70], PFOS: 3.33 [3.05, 3.62], PFOA: 1.37 [1.27, 1.48], PFNA: 2.39 [2.18, 2.63]); maternal serum to cord ratios were similar. Maternal to cord ratios decreased with maternal age, but not with other socio-demographic factors. CONCLUSIONS: Our results suggest that PFAS fetal body burden can be assessed using as proxy maternal plasma or serum collected early in pregnancy. Maternal age might influence PFAS placental transfer.

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PT - JOURNAL ARTICLE
DEP - 20150806
TA - Environ Res
JT - Environmental research
JID - 0147621
OTO - NOTNLM
OT - Cord blood
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OT - Mother-child pairs
OT - Perfluoroalkyl substances (PFAS)
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 OWN - NLM
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 DA - 20150818
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 IS - 1096-0953 (Electronic)
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 TI - Serum perfluoroalkyl acids and time to pregnancy in nulliparous women.
 PG - ER15950
 LID - S0013-9351(15)30051-7 [pii]
 LID - 10.1016/j.envres.2015.08.007 [doi]

AB - BACKGROUND: Previous studies on the exposure to perfluoroalkyl acids (PFAAs) and female fertility have provided conflicting results. We aimed to investigate the association between several PFAAs and time to pregnancy among nulliparous women. METHODS: From 2008 to 2013, we included 1372 women from the Aarhus Birth Cohort, Aarhus University Hospital, Denmark, who provided data on time to pregnancy and a blood sample before 14 gestational weeks. We measured the levels of 16 PFAAs in maternal serum and report data for seven compounds with quantifiable values in at least 50% of samples. Fecundability ratios according to PFAA levels (quartiles or continuous levels) were estimated by discrete-time survival analyses, adjusted for potential confounders. We further investigated the association between PFAAs and infertility (time to pregnancy>12 months or infertility treatment prior to the studied pregnancy) by multivariable logistic regression. RESULTS: Median levels of perfluorooctane sulfonate and perfluorooctanoate were 8.3 and 2.0ng/mL. Overall, no obvious associations were found between any PFAAs and fecundability or infertility. Adjusted fecundability ratios (95% confidence intervals) were 1.09 (0.92-1.29) for perfluorooctane sulfonate and 1.10 (0.93-1.30) for perfluorooctanoate (highest versus lowest quartile). CONCLUSIONS: We found no evidence of an association between present serum levels of PFAAs and longer time to pregnancy or infertility in nulliparous women. This study further adds to the sparse knowledge on PFAAs besides perfluorooctane sulfonate and perfluorooctanoate.

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LA - ENG

PT - JOURNAL ARTICLE

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TA - Environ Res

JT - Environmental research

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OTO - NOTNLM

OT - Female fertility

OT - Female infertility

OT - Perfluorooctane sulfonate

OT - Perfluorooctanoate

OT - Time to pregnancy

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DP - 2015 Aug 27

TI - Potential toxicity of environmentally relevant perfluorooctane sulfonate (PFOS) concentrations to yellow-legged gull *Larus michahellis* embryos.

AB - Perfluorooctane sulfonate (PFOS) is considered an emerging pollutant because of its wide distribution in both aquatic and terrestrial ecosystems, as well as its potential toxicity to living organisms. Although PFOS environmental levels and the adverse effects on classical model organisms in toxicological studies are well known, including developmental alterations and alteration of oxidative status, its toxicity to free-living species has been seldom investigated. The aim of this study was to assess the potential toxicity of environmental levels of PFOS to yellow-legged gull (*Larus michahellis*) embryos under field experimental conditions. In a within-clutch experimental design, we injected two PFOS concentrations (100 ng PFOS/g egg weight and 200 ng PFOS/g egg weight) in ovo soon after laying. Eggs were collected when they reached the cracking stage. We investigated the effects of PFOS treatment, laying order and sex on both morphological and biochemical endpoints of embryos. Specifically, we assessed changes in embryo body mass and tarsus length, as well as in liver and brain mass. Moreover, the imbalance of oxidative status was evaluated in both liver and brain from embryos by measuring total antioxidant capacity (TAC) and total oxidant status (TOS), while the levels of protein carbonyl content (PCO) and DNA fragmentation were measured as oxidative and genetic damage endpoints, respectively. The concentrations of PFOS we tested did not significantly alter the morphological endpoints, independently of laying order and sex. Similarly, embryo oxidative status and oxidative and genetic damage were not significantly affected by PFOS in ovo exposure. These findings suggest that current environmental PFOS levels do not affect early development of yellow-legged gull embryos.

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 LA - ENG
 PT - JOURNAL ARTICLE
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 TA - Environ Sci Pollut Res Int
 JT - Environmental science and pollution research international
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 OWN - NLM
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 VI - 22
 IP - 16
 DP - 2015 Aug
 TI - Levels of perfluorinated compounds in human breast milk in Jordan: the impact of sociodemographic characteristics.
 PG - 12415-23
 LID - 10.1007/s11356-015-4462-2 [doi]
 AB - There is scarcity in literature in regards to the exact levels of such compounds in the Middle Eastern region including Jordan. This study was conducted to measure the presence and levels of perfluoroalkyl substances (PFASs)

(perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA)) in human milk and local fresh cow milk in northern Jordan and also to investigate the relationship between levels of PFASs and some sociodemographic characteristics of breastfeeding mothers and their infants as well as usage of Teflon kitchenware products. Seventy-nine milk samples were collected from breastfeeding women and 25 samples from local fresh cow milk in northern Jordan. Levels of PFOS and PFOA were liquid/liquid extracted (LLE) by acetone followed by purification on an Oasis hydrophilic-lipophilic balance (HLB) solid-phase extraction (SPE). Separations and detections were performed by liquid chromatography-tandem mass spectrometry. Limits of quantitation (LOQs) were 10 ng/L for both PFOA and PFOS. The measured concentrations ranged between non-detectable (ND) and 178 ng/L for PFOS and between 24 and 1120 ng/L for PFOA in human milk and between ND-178 ng/L and LOQ-160 ng/L in fresh cow milk, respectively. Median concentrations of PFOS in human milk samples from Jordan in this study were lower than those found in a recent study from Italy. Moreover, mean concentrations of PFOA and PFOS were significantly higher in milk samples provided by older women. Also, mean concentrations of PFOA was much higher in multiparas and those who have younger infants. The mean rank of PFOA was twice as high in the milk of women who had older Teflon products in kitchen compared to those who had relatively new Teflon products.

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TA - Environ Sci Pollut Res Int

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VI - 49

IP - 17

DP - 2015 Sep 1

TI - Breastfeeding as an Exposure Pathway for Perfluorinated Alkylates.

PG - 10466-73

LID - 10.1021/acs.est.5b02237 [doi]

AB - Perfluorinated alkylate substances (PFASs) are widely used and have resulted in human exposures worldwide. PFASs occur in breast milk, and the duration of breastfeeding is associated with serum-PFAS concentrations in children. To determine the time-dependent impact of this exposure pathway, we examined the serum concentrations of five major PFASs in a Faroese birth cohort at birth, and at ages 11, 18, and 60 months. Information about the children's breastfeeding history was obtained from the mothers. The trajectory of serum-PFAS concentrations during months with and without breastfeeding was examined by linear mixed models that accounted for the correlations of the PFAS measurements for each child. The models were adjusted for confounders such as body size. The duration of exclusive breastfeeding was associated with increases of most PFAS concentrations by up to 30% per month, with lower increases during partial breast-feeding. In contrast to this main pattern, perfluorohexanesulfonate was not affected by breast-feeding. After cessation of breastfeeding, all serum concentrations decreased. This finding supports the evidence of breastfeeding being an important exposure pathway to some PFASs in infants.

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LA - eng
 PT - Journal Article
 DEP - 20150820
 PL - United States
 TA - Environ Sci Technol
 JT - Environmental science & technology
 JID - 0213155
 SB - IM
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 AID - 10.1021/acs.est.5b02237 [doi]
 PST - ppublish
 SO - Environ Sci Technol. 2015 Sep 1;49(17):10466-73. doi: 10.1021/acs.est.5b02237.
 Epub 2015 Aug 20.

 PMID- 26244813
 OWN - NLM
 STAT- In-Data-Review
 DA - 20150901
 IS - 1520-5851 (Electronic)
 IS - 0013-936X (Linking)
 VI - 49
 IP - 17
 DP - 2015 Sep 1
 TI - Efficient Sorption and Removal of Perfluoroalkyl Acids (PFAAs) from Aqueous
 Solution by Metal Hydroxides Generated in Situ by Electrocoagulation.
 PG - 10562-9
 LID - 10.1021/acs.est.5b02092 [doi]
 AB - Removal of environmentally persistent perfluoroalkyl acids (PFAAs), that is,
 perfluorooctanesulfonate (PFOS) and perfluorocarboxylic acids (PFCAs, C4
 approximately C10) were investigated through sorption on four metal hydroxide
 flocs generated in situ by electrocoagulation in deionized water with 10 mM NaCl
 as supporting electrolyte. The results indicated that the zinc hydroxide flocs
 yielded the highest removal efficiency with a wide range concentration of
 PFOA/PFOS (1.5 μ M approximately 0.5 mM) at the zinc dosage <150 mg L⁻¹ with
 the energy consumption <0.18 Wh L⁻¹. The sorption kinetics indicated that the
 zinc hydroxide flocs had an equilibrium adsorbed amount (q_e) up to 5.74/7.69 mmol
 g⁻¹ (Zn) for PFOA/PFOS at the initial concentration of 0.5 mM with an initial
 sorption rate (v_0) of $1.01 \times 10^{(3)}/1.81 \times 10^{(3)}$ mmol g⁻¹ h⁻¹. The sorption of
 PFOA/PFOS reached equilibrium within <10 min. The sorption mechanisms of PFAAs on
 the zinc hydroxide flocs were proposed based on the investigation of various
 driving forces. The results indicated that the hydrophobic interaction was
 primarily responsible for the PFAAs sorption. The electrocoagulation process with
 zinc anode may have a great potential for removing PFAAs from industrial
 wastewater as well as contaminated environmental waterbody.
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 LA - eng
 PT - Journal Article
 DEP - 20150813
 PL - United States
 TA - Environ Sci Technol
 JT - Environmental science & technology
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 SO - Environ Sci Technol. 2015 Sep 1;49(17):10562-9. doi: 10.1021/acs.est.5b02092.
 Epub 2015 Aug 13.

 PMID- 25989421
 OWN - NLM
 STAT- In-Data-Review
 DA - 20150723
 IS - 1552-8618 (Electronic)
 IS - 0730-7268 (Linking)
 VI - 34
 IP - 8
 DP - 2015 Aug
 TI - Temporal trends of perfluoroalkyl substances (PFAS) in eggs of coastal and

offshore birds: Increasing PFAS levels associated with offshore bird species breeding on the Pacific coast of Canada and wintering near Asia.

PG - 1799-808

LID - 10.1002/etc.2992 [doi]

AB - Perfluoroalkyl substances (PFAS) such as perfluoroalkyl carboxylates (PFCAs) and perfluoroalkyl sulfonates (PFSA) have become virtually ubiquitous throughout the environment, and, based on laboratory studies, have known toxicological consequences. Various national and international voluntary phase-outs and restrictions on these compounds have been implemented over the last 10 to 15 years. In the present study, we examine trends (1990/1991–2010/2011) in aquatic birds (ancient murrelet, *Synthliboramphus antiquus* [2009 only]; Leach's storm-petrels, *Oceanodroma leucorhoa*; rhinoceros auklets, *Cerorhinca monocerata*; double-crested cormorants, *Phalacrocorax auritus*; and great blue herons, *Ardea herodias*). The PFCA, PFSA, and stable isotope ($\delta(15)$ N and $\delta(13)$ C) data collected from these species from the Pacific coast of Canada, ranging over 20 to 30 years, were used to investigate temporal changes in PFAS coupled to dietary changes. Perfluorooctane sulfonic acid (PFOS), the dominant PFSA compound in all 4 species, increased and subsequently decreased in auklet and cormorant eggs in line with the manufacturing phase-out of PFOS and perfluorooctanoic acid (PFOA), but concentrations continuously increased in petrel eggs and remained largely unchanged in heron eggs. Dominant PFCA compounds varied between the offshore and coastal species, with increases seen in the offshore species and little or variable changes seen in the coastal species. Little temporal change was seen in stable isotope values, indicating that diet alone is not driving observed PFAS concentrations. *Environ Toxicol Chem* 2015;34:1799–1808. (c) 2015 SETAC.

CI - (c) 2015 SETAC.

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LA - eng

PT - Journal Article
 DEP - 20150518
 PL - United States
 TA - Environ Toxicol Chem
 JT - Environmental toxicology and chemistry / SETAC
 JID - 8308958
 SB - IM
 OTO - NOTNLM
 OT - Perfluoroalkyl carboxylic acids
 OT - Perfluoroalkyl sulfonic acids
 OT - Seabirds
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 SO - Environ Toxicol Chem. 2015 Aug;34(8):1799-808. doi: 10.1002/etc.2992. Epub 2015 May 18.

 PMID- 25787935
 OWN - NLM
 STAT- In-Process
 DA - 20150714
 IS - 1029-2470 (Electronic)
 IS - 1029-2470 (Linking)
 VI - 49
 IP - 8
 DP - 2015 Aug
 TI - Prenatal exposure to the contaminant perfluorooctane sulfonate elevates lipid peroxidation during mouse fetal development but not in the pregnant dam.
 PG - 1015-25
 LID - 10.3109/10715762.2015.1027199 [doi]
 AB - Perfluorooctane sulfonate (PFOS), a member of the perfluorinated chemical family, has been convincingly demonstrated to affect lipid metabolism in animals and humans and readily crosses the placenta to exert its effects on the developing fetuses. While its exact mechanism is still not clear, PFOS exposure has long been suggested to exert its toxicity via oxidative stress and/or altered gene expression. Levels of PFOS and malondialdehyde in various organs and cell cultures have been widely determined as general indicators of non-specific lipid peroxidation after PFOS exposure. In this study, the oxidation of precise polyunsaturated fatty acids and their metabolites, derived from enzymatic and non-enzymatic pathways was determined following PFOS exposure in both adult and maternal/fetal mice. CD-1 mice were exposed to 3 mg/kg body weight/day of PFOS in corn oil by oral gavage until late gestation (GD17). We demonstrated that lipid

peroxidation was particularly and exclusively affected in fetuses exposed to PFOS, but this was not the case in the maternal mice, where limited effects were observed in the enzymatic oxidation pathway. In this study, we demonstrated that PFOS-induced lipid peroxidation might have a greater impact in free radical generation in fetuses than in dams and could be responsible for affecting fetal development. In addition, antioxidant enzymes, such as superoxide dismutase and catalase, appeared to maintain oxidative stress homeostasis partially in adult mice exposed to PFOS. Taken together, our results might elucidate the mechanism of how PFOS induces oxidative stress in vivo.

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FAU - Lee, J C-Y

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LA - eng

PT - Journal Article

PT - Research Support, Non-U.S. Gov't

DEP - 20150424

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TA - Free Radic Res

JT - Free radical research

JID - 9423872

SB - IM

OTO - NOTNLM

OT - PFOS

OT - PUFA

OT - isofuranoids

OT - isoprostanoids

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PST - ppublish

SO - Free Radic Res. 2015 Aug;49(8):1015-25. doi: 10.3109/10715762.2015.1027199. Epub 2015 Apr 24.

PMID- 26192377

OWN - NLM

STAT- In-Data-Review

DA - 20150808

IS - 1567-7257 (Electronic)

IS - 1567-1348 (Linking)

VI - 34

DP - 2015 Aug

TI - An ST11 clone of *Pasteurella multocida*, widely spread among farmed rabbits in the Iberian Peninsula, demonstrates respiratory niche association.

PG - 81-7

LID - 10.1016/j.meegid.2015.07.018 [doi]

LID - S1567-1348(15)00280-4 [pii]

AB - *Pasteurella multocida* is a veterinary pathogen causing diseases with considerable economic repercussions in a wide range of animal hosts. In rabbits, *P. multocida* infections cause a variety of clinical manifestations including rhinitis, pneumonia, septicemia, abscesses, mastitis, and pyometra. In this study, 100 *P. multocida* isolates from different commercial rabbit farms located throughout the Iberian Peninsula were molecularly characterized by capsular typing, detection of four virulence-associated genes (*tbpA*, *toxA*, *hgbB*, and *pfhA*), and multilocus sequence typing (MLST). Rabbit *P. multocida* isolates belonged to three different capsular types: A (47.0%), D (28.0%), and F (25.0%). One group of *P. multocida* isolates of capsular type D and positive for the *hgbB* gene was significantly associated with the clinical presentation of respiratory disease (OR 5.91; 95%CI, 1.63-21.38). These isolates belonged to same sequence type, ST11, in the *P. multocida* Multi-host MLST database. The ST11 clone also includes isolates from porcine and avian pneumonia. This clonal group of epidemiologically unrelated *P. multocida* isolates could be a virulent clone with some degree of specificity for respiratory disease. These findings could be relevant in the development of vaccines for pasteurellosis prevention, especially respiratory disease.

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LA - eng

PT - Journal Article

DEP - 20150717

PL - Netherlands

TA - Infect Genet Evol

JT - Infection, genetics and evolution : journal of molecular epidemiology and evolutionary genetics in infectious diseases

JID - 101084138

SB - IM

OTO - NOTNLM

OT - MLST

OT - Pasteurella multocida

OT - Pasteurellosis

OT - Rabbit

OT - Virulence genes

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AID - S1567-1348(15)00280-4 [pii]

AID - 10.1016/j.meegid.2015.07.018 [doi]

PST - ppublish

SO - Infect Genet Evol. 2015 Aug;34:81-7. doi: 10.1016/j.meegid.2015.07.018. Epub 2015 Jul 17.

PMID- 26242286

OWN - NLM

STAT- In-Data-Review

DA - 20150817

IS - 1520-510X (Electronic)

IS - 0020-1669 (Linking)

VI - 54

IP - 16

DP - 2015 Aug 17

TI - Transition Metal Complexes of Phosphinous Acids Featuring a Quasichelating Unit: Synthesis, Characterization, and Hetero-bimetallic Complexes.

PG - 7945-52

LID - 10.1021/acs.inorgchem.5b01038 [doi]

AB - Diorganophosphane oxides were employed as preligands for the synthesis of catalytically active transition metal complexes of the phosphinous acids (CF₃)₂POH and (C₂F₅)₂POH. Their reactions with solid PtCl₂ and PdCl₂ led to the formation of mononuclear phosphinous acid complexes [Cl₂M{P(R(f))₂OH}₂] (M = Pd, Pt; R(f) = C₂F₅, CF₃), which can be crystallized, for example, as its pyridinium

salts, $2[\text{HPy}]^+[\text{Cl}_2\text{Pd}\{\text{P}(\text{CF}_3)_2\text{O}\}_2]^{2-}$. In vacuo HCl is liberated from the neutral palladium complexes affording mixtures of di- and polynuclear complexes. Moreover, $(\text{C}_2\text{F}_5)_2\text{POH}$ was reacted with several beta-diketonato complexes of palladium, platinum, and nickel yielding air- and moisture-stable complexes $[(\text{acac})_M\{\text{P}(\text{R}(\text{f}))_2\text{O}\}_2\text{H}]$, featuring a quasichelating phosphinous acid phosphinito unit $\{\text{P}(\text{R}(\text{f}))_2\text{O}\dots\text{H}\dots\text{O}(\text{R}(\text{f}))_2\text{P}\}^-$. Treatment of $[\text{Ni}(\text{Cp})_2]$ (Cp = cyclopentadienyl) and $[(\text{cod})\text{RhCl}]_2$ (cod = 1,5-cyclooctadiene) with $(\text{C}_2\text{F}_5)_2\text{POH}$ leads to the substitution of one Cp or chloro ligand by a quasichelating unit. The novel coordination compounds were characterized by NMR and IR spectroscopies, mass spectrometry, and X-ray diffraction analysis. The platinum complex $[(\text{acac})\text{Pt}\{\text{P}(\text{C}_2\text{F}_5)_2\text{O}\}_2\text{H}]$ (acac = acetylacetonato) was used for the construction of hetero-bimetallic complexes by the treatment with $[(\text{cod})\text{RhCl}]_2$ and $[\text{Ni}(\text{Cp})_2]$. The trinuclear bimetallic complex $\{[(\text{acac})\text{Pt}\{\text{P}(\text{C}_2\text{F}_5)_2\text{O}\}_2]_2\text{Ni}\}$ is the first structurally characterized hetero-bimetallic species containing a bis(perfluoroalkyl)phosphinito bridge.

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LA - eng

PT - Journal Article

DEP - 20150805

PL - United States

TA - Inorg Chem

JT - Inorganic chemistry

JID - 0366543

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 OWN - NLM
 STAT- In-Data-Review
 DA - 20150908
 IS - 1422-0067 (Electronic)
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 VI - 16
 IP - 9
 DP - 2015
 TI - Perfluoroalkyl-Functionalized Hyperbranched Polyglycerol as Pore Forming Agents and Supramolecular Hosts in Polymer Microspheres.
 PG - 20183-94
 LID - 10.3390/ijms160920183 [doi]
 AB - Perfluoroalkyl-functionalized, hyperbranched polyglycerols that produce stable microbubbles are integrated into a microfluidic emulsion to create porous microspheres. In a previously-presented work a dendrimer with a perfluorinated shell was used. By replacing this dendrimer core with a hyperbranched core and evaluating different core sizes and degrees of fluorinated shell functionalization, we optimized the process to a more convenient synthesis and higher porosities. The new hyperbranched polyglycerol porogens produced more pores and can be used to prepare microspheres with porosity up to 12% (v/v). The presented preparation forms pores with a perfluoroalkyl-functionalized surface that enables the resulting microspheres to act as supramolecular host systems. The microspheres can incorporate gases into the pores and actives in the polymer matrix, while the perfluoroalkylated pore surface can be used to immobilize perfluoro-tagged molecules onto the pores by fluorine-fluorine interaction.
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LA - eng

PT - Journal Article

DEP - 20150826

PL - Switzerland

TA - Int J Mol Sci

JT - International journal of molecular sciences

JID - 101092791

SB - IM

OTO - NOTNLM

OT - fluorous

OT - functional

OT - host-guest system

OT - microbubbles

OT - microfluidics

OT - non-covalent

OT - polyglycerol

OT - porous

OT - supramolecular

OT - template

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AID - ijms160920183 [pii]

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SO - Int J Mol Sci. 2015 Aug 26;16(9):20183-94. doi: 10.3390/ijms160920183.

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OWN - NLM

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DA - 20150803

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IS - 1099-1263 (Electronic)

IS - 0260-437X (Linking)

DP - 2015 Aug 3

TI - Perfluorinated chemicals, PFOS and PFOA, enhance the estrogenic effects of
17beta-estradiol in T47D human breast cancer cells.

LID - 10.1002/jat.3210 [doi]

AB - Perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) are the two most popular surfactants among perfluorinated compounds (PFCs), with a wide range of uses. Growing evidence suggests that PFCs have the potential to interfere with estrogen homeostasis, posing a risk of endocrine-disrupting effects. This in vitro study aimed to investigate the estrogenic effect of these compounds on T47D hormone-dependent breast cancer cells. PFOS and PFOA (10^{-12} to 10^{-4} M) were not able to induce estrogen response element (ERE) activation in the ERE luciferase reporter assay. The ERE activation was induced when the cells were co-incubated with PFOS (10^{-10} to 10^{-7} M) or PFOA (10^{-9} to 10^{-7} M) and 1 nM of 17 β -estradiol (E2). PFOS and PFOA did not modulate the expression of estrogen-responsive genes, including progesterone (PR) and trefoil factor (pS2), but these compounds enhanced the effect of E2-induced pS2 gene expression. Neither PFOS nor PFOA affected T47D cell viability at any of the tested concentrations. In contrast, co-exposure with PFOS or PFOA and E2 resulted in an increase of E2-induced cell viability, but no effect was found with 10 ng ml⁻¹ EGF co-exposure. Both compounds also intensified E2-dependent growth in the proliferation assay. ERK1/2 phosphorylation was increased by co-exposure with PFOS or PFOA and E2, but not with EGF. Collectively, this study shows that PFOS and PFOA did not possess estrogenic activity, but they enhanced the effects of E2 on estrogen-responsive gene expression, ERK1/2 activation and the growth of the hormone-deprived T47D cells. Copyright (c) 2015 John Wiley & Sons, Ltd.

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 DEP - 20150803
 TA - J Appl Toxicol
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 JID - 8109495
 OTO - NOTNLM
 OT - T47D hormone-dependent human breast cancer cells
 OT - cell growth
 OT - estrogenic effect
 OT - perfluorooctane sulfonate (PFOS)
 OT - perfluorooctanoic acid (PFOA)
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 OWN - NLM
 STAT- In-Data-Review
 DA - 20150824
 IS - 1089-7690 (Electronic)
 IS - 0021-9606 (Linking)
 VI - 143
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 TI - Electron attachment and positive ion chemistry of monohydrogenated fluorocarbon radicals.
 PG - 074309
 LID - 10.1063/1.4928691 [doi]
 AB - Rate coefficients and product branching fractions for electron attachment and for reaction with Ar(+) are measured over the temperature range 300-585 K for three monohydrogenated fluorocarbon (HFC) radicals (CF₃CHF, CHF₂CF₂, and CF₃CHF₂CF₂), as well as their five closed-shell precursors (1-HC₂F₄I, 2-HC₂F₄I, 2-HC₂F₄Br, 1-HC₃F₆I, 2-HC₃F₆Br). Attachment to the HFC radicals is always fairly inefficient (between 0.1% and 10% of the Vogt-Wannier capture rate), but generally faster

than attachment to analogous perfluorinated carbon radicals. The primary products in all cases are HF-loss to yield CnFm-1 (-) anions, with only a minor branching to F(-) product. In all cases the temperature dependences are weak. Attachment to the precursor halocarbons is near the capture rate with a slight negative temperature dependence in all cases except for 2-HC2F4Br, which is approximately 10% efficient at 300 K and becomes more efficient, approaching the capture rate at higher temperatures. All attachment kinetics are successfully reproduced using a kinetic modeling approach. Reaction of the HFC radicals with Ar(+) proceeds at or near the calculated collisional rate coefficient in all cases, yielding a wide variety of product ions.

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LA - eng

PT - Journal Article

PL - United States

TA - J Chem Phys

JT - The Journal of chemical physics

JID - 0375360

SB - IM

EDAT- 2015/08/25 06:00

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AID - 10.1063/1.4928691 [doi]

PST - ppublish

SO - J Chem Phys. 2015 Aug 21;143(7):074309. doi: 10.1063/1.4928691.

PMID- 26298605

OWN - NLM

STAT- In-Data-Review

DA - 20150908

IS - 1873-3778 (Electronic)

IS - 0021-9673 (Linking)

VI - 1413

DP - 2015 Sep 25

TI - Gas chromatography-tandem mass spectrometry with atmospheric pressure chemical ionization for fluorotelomer alcohols and perfluorinated sulfonamides determination.

PG - 107-16

LID - 10.1016/j.chroma.2015.08.016 [doi]

LID - S0021-9673(15)01165-6 [pii]

AB - Ionization and in source-fragmentation behavior of four fluorotelomer alcohols (FTOH) (4:2 FTOH, 6:2 FTOH, 8:2 FTOH and 10:2 FTOH) and four N-alkyl fluorooctane sulfonamides/-ethanols (N-MeFOSA, N-EtFOSA, N-MeFOSE and N-EtFOSE) by APCI has been studied and compared with the traditionally used EI and CI. Protonated molecule was the base peak of the APCI spectrum in all cases giving the possibility of selecting it as a precursor ion for MS/MS experiments. Following, CID fragmentation showed common product ions for all FOSAs/FOSEs (C4F7 and C3F5). Nevertheless, the different functionality gave characteristic pattern fragmentations. For instance, FTOHs mainly loss H₂O+HF, FOSAs showed the losses of SO₂ and HF while FOSEs showed the losses of H₂O and SO₂. Linearity, repeatability and LODs have been studied obtaining instrumental LODs between 1 and 5fg. Finally, application to river water and influent and effluent waste water samples has been carried out in order to investigate the improvements in detection capabilities of this new source in comparison with the traditionally used EI/CI sources. Matrix effects in APCI have been evaluated in terms of signal enhancement/suppression when comparing standards in solvent and matrix. No matrix effects were observed and concentrations found in samples were in the range of 1-100pgL(-1) far below the LODs achieved with methods previously reported. Unknown related perfluoroalkyl substances, as methyl-sulfone and methyl-sulfoxide analogues for FTOHs, were also discovered and tentatively identified.

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LA - eng

PT - Journal Article
DEP - 20150813
PL - Netherlands
TA - J Chromatogr A
JT - Journal of chromatography. A
JID - 9318488
SB - IM
OTO - NOTNLM
OT - Atmospheric pressure chemical ionization
OT - Fluorotelomer alcohols
OT - Gas chromatography
OT - Perfluorinated sulfonamides
OT - Time-of-flight mass spectrometry
EDAT- 2015/08/25 06:00
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PHST- 2015/08/09 [revised]
PHST- 2015/08/10 [accepted]
PHST- 2015/08/13 [aheadofprint]
AID - S0021-9673(15)01165-6 [pii]
AID - 10.1016/j.chroma.2015.08.016 [doi]
PST - ppublish
SO - J Chromatogr A. 2015 Sep 25;1413:107-16. doi: 10.1016/j.chroma.2015.08.016. Epub 2015 Aug 13.

PMID- 26195039
OWN - NLM
STAT- In-Data-Review
DA - 20150803
IS - 1873-3778 (Electronic)
IS - 0021-9673 (Linking)
VI - 1408
DP - 2015 Aug 21
TI - Ion-pair reversed phase liquid chromatography with ultraviolet detection for analysis of ultraviolet transparent cations.
PG - 261-6
LID - 10.1016/j.chroma.2015.07.026 [doi]
LID - S0021-9673(15)00977-2 [pii]
AB - This paper describes the use of an anionic ion-pair reagent (IPR) to improve the ultraviolet (UV) detection and hydrophobic retention of polar and UV transparent cations. Anionic IPR added to the mobile phase forms an ion-pair with cations. Formation of the ion-pair causes a redshift in the absorption wavelength, making it possible for direct UV detection of UV-inactive cations. The ion-pairs with increased hydrophobicity were separated by reversed phase liquid chromatography (RPLC). Different perfluorinated carboxylic acids (trifluoroacetic acid, heptafluorobutyric acid, nonafluoropentanoic acid) were evaluated as IPR in the separation and detection of the common cations sodium, ammonium and

Tris(hydroxymethyl)aminomethane (Tris). The effects of the IPR type and concentration on separation and detection have been investigated to understand the separation and detection mechanisms. The optimal separation and detection conditions were attained with mobile phase containing 0.1% nonafluoropentanoic acid and with the UV detection at 210nm. UV detection and charged aerosol detection (CAD) were compared in the quantitation of the cations. The limit of quantitation (LOQ) of sodium and Tris with UV detection is comparable to that by CAD. The LOQ of ammonium with UV detection (1ppm or 3ng) is about 20-fold lower than that (20ppm or 60ng) by CAD. The RPLC-UV method was used to monitor ammonium clearance during ultrafiltration and diafiltration in the manufacturing of biopharmaceutical drug substance.

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LA - eng

PT - Journal Article

DEP - 20150713

PL - Netherlands

TA - J Chromatogr A

JT - Journal of chromatography. A

JID - 9318488

SB - IM

OTO - NOTNLM

OT - Cations

OT - Improve UV detection

OT - Ion-pair RPLC
 EDAT- 2015/07/22 06:00
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 PHST- 2015/07/13 [aheadofprint]
 AID - S0021-9673(15)00977-2 [pii]
 AID - 10.1016/j.chroma.2015.07.026 [doi]
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 SO - J Chromatogr A. 2015 Aug 21;1408:261-6. doi: 10.1016/j.chroma.2015.07.026. Epub 2015 Jul 13.

 PMID- 26364075
 OWN - NLM
 STAT- Publisher
 DA - 20150913
 LR - 20150914
 IS - 1095-7103 (Electronic)
 IS - 0021-9797 (Linking)
 VI - 460
 DP - 2015 Aug 29
 TI - Semifluorinated thiols in Langmuir monolayers - A study by nonlinear and linear vibrational spectroscopies.
 PG - 290-302
 LID - S0021-9797(15)30164-8 [pii]
 LID - 10.1016/j.jcis.2015.08.069 [doi]
 AB - A series of semifluorinated thiols of the general formula $C_mF_{2m+1}C_nH_{2n}SH$ (abbr. F_mH_nSH) have been synthesized and characterized in Langmuir monolayers with surface pressure-area isotherms, complemented with polarization-modulated reflection absorption spectroscopy (PM-IRRAS) and sum-frequency generation (SFG) techniques. A comparative analysis was performed for compounds having the same length of fluorinated segment (F10) and variable length of the hydrogenated part (H6, H10, H12), and having identical hydrogenated segment (H12) connected to a fluorinated moiety of different lengths (F6, F8, F10). For the sake of comparison, an alkanethiol (H18SH) was also examined, and F10H10COOH and F10H10OH molecules were used for helping the assignment of SFG spectra of CH stretches. SFG was applied to investigate the hydrocarbon chain and the terminal CF₃ group, while PM-IRRAS was used to probe CF₂ groups. The number of gauche defects in the hydrocarbon chain increased with the increasing length of the molecule, either by elongation of the hydrogenated or perfluorinated part. SFG measurements recorded at three polarization combinations (ppp, ssp, sps) enabled us to estimate the tilt angle of the terminal CF₃ group in semifluorinated thiol molecules as ranging from 35 degrees to 45 degrees , which is consistent with nearly vertical fluorinated segments. Upon increasing the surface pressure, the fluorinated segment gets slightly more upright, but the hydrocarbon chain tilt increases while keeping the same average number of gauche defects. The extent of disorder

in the hydrogenated segment may be controlled by varying the size of the fluorinated segment, and this could be exploited for designing functionalized surfaces with insertion of other molecules in the defect region.

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LA - ENG

PT - JOURNAL ARTICLE

DEP - 20150829

TA - J Colloid Interface Sci

JT - Journal of colloid and interface science

JID - 0043125

OTO - NOTNLM

OT - Air/water interface

OT - Alkanethiols

OT - Langmuir monolayers

OT - Nonlinear spectroscopy

OT - Polarization-modulated reflection absorption spectroscopy

OT - Semifluorinated alkanes

OT - Sum-frequency generation spectroscopy

OT - Vibrational spectroscopy

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PHST- 2015/08/27 [revised]
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AID - S0021-9797(15)30164-8 [pii]
AID - 10.1016/j.jcis.2015.08.069 [doi]
PST - aheadofprint
SO - J Colloid Interface Sci. 2015 Aug 29;460:290-302. doi:
10.1016/j.jcis.2015.08.069.

PMID- 26282221
OWN - NLM
STAT- Publisher
DA - 20150818
LR - 20150819
IS - 1873-3336 (Electronic)
IS - 0304-3894 (Linking)
VI - 300
DP - 2015 Aug 3
TI - Effect of sound frequency and initial concentration on the sonochemical degradation of perfluorooctane sulfonate (PFOS).
PG - 662-669
LID - S0304-3894(15)00614-7 [pii]
LID - 10.1016/j.jhazmat.2015.07.077 [doi]
AB - Perfluorooctanesulfonic acid (PFOS) is a perfluorinated compound (PFC) highly resistant to conventional advance oxidation processes, which was widely used in industrial activities due to its surfactant nature, oleophobic-hydrophobic properties, and chemical inertness. Sonochemical treatment has been suggested as an effective approach to treat aqueous solutions containing minimal levels of PFCs. This study investigates PFOS sonochemical degradation and its dependency on the initial concentration (10-460µM), and the applied sound frequency (25 and 500kHz, and 1MHz). PFOS was degraded by sonochemical treatment at concentrations as high as 460µM, as demonstrated by fluoride release and total organic content data. PFOS degradation rate was higher at megasonic frequencies (1MHz) compared to ultrasonic frequencies (25-500kHz). PFOS degradation was controlled by saturation kinetics as indicated by an increase in PFOS degradation rate with increasing PFOS concentration until a maximum, after which the degradation rate was independent of the concentration. The saturation conditions were dependent on the sound frequency, and they were reached at a lower concentration under 1MHz (100µM) compared to the 500kHz frequency (>460µM). Overall, the results of this study demonstrate that high PFOS concentration can be effectively sonochemically treated using megasonic frequencies.
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LA - ENG

PT - JOURNAL ARTICLE

DEP - 20150803

TA - J Hazard Mater

JT - Journal of hazardous materials

JID - 9422688

OTO - NOTNLM

OT - Kinetics

OT - Megasonic

OT - PFOS

OT - Perfluorocarbons

OT - Sonochemistry

OT - Sonolysis

OT - Ultrasonic

EDAT- 2015/08/19 06:00

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PHST- 2015/06/18 [received]

PHST- 2015/07/27 [revised]

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AID - S0304-3894(15)00614-7 [pii]

AID - 10.1016/j.jhazmat.2015.07.077 [doi]

PST - aheadofprint

SO - J Hazard Mater. 2015 Aug 3;300:662-669. doi: 10.1016/j.jhazmat.2015.07.077.

PMID- 26301895

OWN - NLM

STAT- In-Data-Review

DA - 20150904

IS - 1520-6904 (Electronic)

IS - 0022-3263 (Linking)

VI - 80

IP - 17

DP - 2015 Sep 4

TI - Synthesis of Functionalized Perfluorinated Porphyrins for Improved Spin Switching.
 PG - 8496-500
 LID - 10.1021/acs.joc.5b01524 [doi]
 AB - We have established a method to synthesize perfluorinated meso-phenylporphyrins with one phenyl group bearing a substituent in the ortho position. These novel electron-deficient porphyrins are interesting for model enzymes, catalysis, photodynamic therapy, and electron transfer. The key step is the synthesis of an iodine-substituted porphyrin and its Suzuki cross coupling with boronic acid derivatives. We applied the novel strategy to synthesize a highly electron-deficient, azopyridine-substituted Ni-porphyrin that undergoes an improved ligand-driven coordination-induced spin-state switch.
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 LA - eng
 PT - Journal Article
 DEP - 20150825
 PL - United States
 TA - J Org Chem
 JT - The Journal of organic chemistry
 JID - 2985193R
 SB - IM
 EDAT- 2015/08/25 06:00
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 PHST- 2015/08/25 [aheadofprint]
 AID - 10.1021/acs.joc.5b01524 [doi]
 PST - ppublish
 SO - J Org Chem. 2015 Sep 4;80(17):8496-500. doi: 10.1021/acs.joc.5b01524. Epub 2015 Aug 25.

 PMID- 26302372
 OWN - NLM
 STAT- Publisher
 DA - 20150831
 LR - 20150831
 IS - 1520-6904 (Electronic)
 IS - 0022-3263 (Linking)

DP - 2015 Aug 31

TI - Stereochemical Investigation of the Products of the Photoinduced Perfluoroalkylation-Dimerization of Anthracene.

AB - The photoinduced perfluoroalkylation of anthracene has been shown to provide 9,9',10,10'-tetrahydro-10,10'-diperfluoroalkyl-9,9'-bianthracenes in over 70% yields, each perfluoroalkyl iodide producing three diastereomers. The structures of all three diastereomers (cis,cis, cis,trans, and trans,trans isomers) have been elucidated by both NMR and X-ray crystallographic analyses. Most notably, an X-ray crystallographic analysis has revealed that the trans,trans diastereomer having the two trifluoromethyl groups in 10,10'-positions adopts a 74 degrees twisted relationship of the two dihydroanthracene rings. Furthermore, each of the two trans,trans isomers 2a,b has been shown to exist as a mixture of new types of atropisomers and the energy barrier for the interconversion of the two atropisomers has been estimated to be 12 kcal/mol by variable-temperature NMR analysis.

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LA - ENG

PT - JOURNAL ARTICLE

DEP - 20150831

TA - J Org Chem

JT - The Journal of organic chemistry

JID - 2985193R

EDAT- 2015/08/25 06:00

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AID - 10.1021/acs.joc.5b01655 [doi]

PST - aheadofprint

SO - J Org Chem. 2015 Aug 31.

PMID- 25549929

OWN - NLM

STAT- In-Process

DA - 20150605

IS - 1873-264X (Electronic)
IS - 0731-7085 (Linking)
VI - 112
DP - 2015 Aug 10
TI - Exploring the possibilities of capacitively coupled contactless conductivity detection in combination with liquid chromatography for the analysis of polar compounds using aminoglycosides as test case.
PG - 155-68
LID - 10.1016/j.jpba.2014.12.015 [doi]
LID - S0731-7085(14)00610-4 [pii]
AB - The analysis of highly polar (often charged) compounds which lack a strong UV absorbing chromophore is really challenging. Despite the numerous analytical methods published, the demand for a simple, robust and cheap technique for their analysis still persists. Here, reversed phase (RP) liquid chromatography (LC) with capacitively coupled contactless conductivity detection (C(4)D) was explored for the first time as a possible method for separation and detection of various aminoglycoside (AMG) antibiotics which were taken as typical test compounds: tobramycin (TOB), spectinomycin, streptomycin, amikacin, kanamycin A and kanamycin B. C(4)D was performed using a commercially available as well as a laboratory made cell. As ion-pairing reagents (IPR) four perfluorinated carboxylic acids were used: pentafluoropropionic acid, heptafluorobutyric acid, nonafluoropentanoic acid (NFPA) and pentadecafluorooctanoic acid (PDFOA). 0.125 mM NFPA-acetonitrile (ACN) (90:10) or 0.125 mM PDFOA-ACN (70:30) as mobile phases were suitable to detect TOB with reasonable retention times. However, NFPA was preferred for practical reasons. Its applicable concentration range in the mobile phase was strongly restricted by loss of chromatographic performance at lower levels and excessive background conductivity at higher levels. Overall repeatability and robustness of the method were rather poor which was explained by the relatively low IPR levels. Selectivity between the tested AMGs was mainly influenced by the number of protonated amino groups per molecule making it impossible to separate compounds of equal net charges. Problems encountered with gradient elution, hydrophilic interaction liquid chromatography (HILIC) and separation at high pH without IPRs are also discussed.
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LA - eng

PT - Journal Article

PT - Research Support, Non-U.S. Gov't

DEP - 20141217

PL - England

TA - J Pharm Biomed Anal

JT - Journal of pharmaceutical and biomedical analysis

JID - 8309336

SB - IM

OTO - NOTNLM

OT - Aminoglycosides

OT - C(4)D

OT - Explorative study

OT - Ion-pairing reagents

OT - LC

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PHST- 2014/09/24 [received]

PHST- 2014/12/01 [revised]

PHST- 2014/12/05 [accepted]

PHST- 2014/12/17 [aheadofprint]

AID - S0731-7085(14)00610-4 [pii]

AID - 10.1016/j.jpba.2014.12.015 [doi]

PST - ppublish

SO - J Pharm Biomed Anal. 2015 Aug 10;112:155-68. doi: 10.1016/j.jpba.2014.12.015.
Epub 2014 Dec 17.

PMID- 26264254

OWN - NLM

STAT- Publisher

DA - 20150812

LR - 20150813

IS - 1876-7478 (Electronic)

IS - 1874-7787 (Linking)

DP - 2015 Aug 8

TI - Transcriptome of the Antarctic amphipod *Gondogeneia antarctica* and its response to pollutant exposure.

LID - S1874-7787(15)30004-0 [pii]

LID - 10.1016/j.margen.2015.07.012 [doi]

AB - *Gondogeneia antarctica* is widely distributed off the western Antarctic Peninsula and is a key species in the Antarctic food web. In this study, we performed Illumina sequencing to produce a total of 4,599,079,601 (4.6Gb) nucleotides and a comprehensive transcript dataset for *G. antarctica*. Over 46 million total reads were assembled into 20,749 contigs, and 12,461 annotated genes were predicted by Blastx. The RNA-seq results after exposure to three pollutants showed that 658, 169 and 367 genes that were potential biomarkers of responses to pollutants for this species were specifically upregulated after exposure to PCBs (Polychlorinated biphenyls), PFOS (Perfluorooctanesulfonic acid) and PFOA (Perfluorooctanoic acid), respectively. These data represent the first transcriptome resource for the Antarctic amphipod *G. antarctica* and provide a useful resource for studying Antarctic marine species.

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LA - ENG

PT - JOURNAL ARTICLE

DEP - 20150808

TA - Mar Genomics

JT - Marine genomics

JID - 101475200

OTO - NOTNLM

OT - Amphipod
 OT - Antarctica
 OT - Gondogeneia antarctica
 OT - Transcriptome
 EDAT- 2015/08/13 06:00
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 PHST- 2015/07/08 [revised]
 PHST- 2015/07/08 [accepted]
 AID - S1874-7787(15)30004-0 [pii]
 AID - 10.1016/j.margen.2015.07.012 [doi]
 PST - aheadofprint
 SO - Mar Genomics. 2015 Aug 8. pii: S1874-7787(15)30004-0. doi:
 10.1016/j.margen.2015.07.012.

PMID- 26158308
 OWN - NLM
 STAT- In-Data-Review
 DA - 20150803
 IS - 1543-8392 (Electronic)
 IS - 1543-8384 (Linking)
 VI - 12
 IP - 8
 DP - 2015 Aug 3
 TI - Antiangiogenic and Anticancer Properties of Bifunctional Ruthenium(II)-p-Cymene
 Complexes: Influence of Pendant Perfluorous Chains.
 PG - 3089-96
 LID - 10.1021/acs.molpharmaceut.5b00417 [doi]
 AB - Two bifunctional ruthenium(II)-p-cymene complexes with perfluorinated side
 chains, attached via pyridine ligands, have been evaluated in a series of in
 vitro and in vivo assays. Their effects on human endothelial (ECRF24 and HUVEC)
 cells, noncancerous human embryonic kidney (HEK-293) cells, and various human
 tumor cells were investigated. The complex with the shorter chain, 1, inhibits
 the proliferation of the tumor cell lines and ECRF24, whereas 2 selectively
 inhibits ECRF24 and HUVEC proliferation. Neither inhibits the migration of ECRF24
 cells whereas both compounds inhibit sprout formation in HUVEC cells. Using three
 preclinical models, i.e., vasculature formation in the chorioallantoic membrane
 (CAM) of the chicken embryo, human A2780 ovarian carcinoma tumors xenografted on
 the CAM, and human LS174T colorectal adenocarcinoma tumors grown in athymic mice,
 the angiostatic and anticancer activities of these two complexes were studied.
 Overall, 1 inhibited tumor growth predominantly through an anticancer effect
 whereas 2 inhibited tumor growth predominately via an antiangiogenic mechanism.

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LA - eng

PT - Journal Article

DEP - 20150721

PL - United States

TA - Mol Pharm

JT - Molecular pharmaceuticals

JID - 101197791

SB - IM

OTO - NOTNLM

OT - CAM model

OT - antiangiogenesis

OT - bioorganometallic chemistry

OT - colorectal adenocarcinoma

OT - fluorine chemistry

OT - ovarian carcinoma

OT - ruthenium(II)-arene complexes

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SO - Mol Pharm. 2015 Aug 3;12(8):3089-96. doi: 10.1021/acs.molpharmaceut.5b00417. Epub
2015 Jul 21.

PMID- 26084549
 OWN - NLM
 STAT- In-Process
 DA - 20150710
 IS - 1541-3772 (Electronic)
 IS - 1048-2911 (Linking)
 VI - 25
 IP - 2
 DP - 2015 Aug
 TI - Perfluorinated Alkyl Substances: Emerging Insights Into Health Risks.
 PG - 147-63
 LID - 10.1177/1048291115590506 [doi]
 AB - Perfluorinated alkyl substances have been in use for over sixty years. These highly stable substances were at first thought to be virtually inert and of low toxicity. Toxicity information slowly emerged on perfluorooctanoic acid and perfluorooctane sulfonate. More than thirty years ago, early studies reported immunotoxicity and carcinogenicity effects. The substances were discovered in blood samples from exposed workers, then in the general population and in community water supplies near U.S. manufacturing plants. Only recently has research publication on perfluorooctanoic acid and perfluorooctane sulfonate intensified. While the toxicology database is still far from complete, carcinogenicity and immunotoxicity now appear to be relevant risks at prevalent exposure levels. Existing drinking water limits are based on less complete evidence that was available before 2008 and may be more than 100-fold too high. As risk evaluations assume that untested effects do not require regulatory attention, the greatly underestimated health risks from perfluorooctanoic acid and perfluorooctane sulfonate illustrate the public health implications of assuming the safety of incompletely tested industrial chemicals.
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 PT - Journal Article
 PT - Research Support, N.I.H., Extramural
 PT - Research Support, Non-U.S. Gov't
 DEP - 20150617
 PL - United States
 TA - New Solut
 JT - New solutions : a journal of environmental and occupational health policy : NS
 JID - 9100937
 SB - IM

OTO - NOTNLM
 OT - carcinogen
 OT - exposure limit
 OT - immunotoxicant
 OT - perfluorinated octanoic acid
 OT - perfluorooctane sulfonate
 OT - risk assessment
 EDAT- 2015/06/19 06:00
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 AID - 1048291115590506 [pii]
 AID - 10.1177/1048291115590506 [doi]
 PST - ppublish
 SO - New Solut. 2015 Aug;25(2):147-63. doi: 10.1177/1048291115590506. Epub 2015 Jun 17.

 PMID- 26303760
 OWN - NLM
 STAT- Publisher
 DA - 20150825
 LR - 20150826
 IS - 1532-3102 (Electronic)
 IS - 0143-4004 (Linking)
 DP - 2015 Aug 6
 TI - Organic anion transporter 4 (OAT 4) modifies placental transfer of perfluorinated alkyl acids PFOS and PFOA in human placental ex vivo perfusion system.
 LID - S0143-4004(15)30013-8 [pii]
 LID - 10.1016/j.placenta.2015.07.119 [doi]
 AB - INTRODUCTION: Perfluorinated alkyl acids (PFAAs) are widely used in industry and consumer products. Pregnant women are exposed to PFAAs and their presence in umbilical cord blood represents fetal exposure. Interestingly, PFAAs are substrates for organic anion transporters (OAT) of which OAT4 is expressed in human placenta. METHODS: To evaluate the contribution of OAT4 and ATP-binding cassette transporter G2 (ABCG2) proteins in the transplacental transfer of perfluoro octane sulfonate (PFOS) and perfluoro octanoate (PFOA) an ex vivo dual recirculating human placental perfusion was used. Altogether 8 placentas from healthy mothers with uncomplicated pregnancies were successfully perfused. RESULTS: Both PFOS and PFOA crossed the placenta as suggested by in vivo data in the literature. The expression of OAT4 and ABCG2 proteins were studied by immunoblotting and correlation with the transfer index %(TI %) of PFOS and PFOA at 120 and 240 min (n = 4) was studied. The expression of OAT4 was in negative correlation with TI % of PFOA (R2 = 0.92, p = 0.043) and PFOS (R2 = 0.99, p = 0.007) at 120 min while at 240 min the correlation was statistically significant only with PFOA. The expression of ABCG2 did not correlate with TI% of PFOS or PFOA. DISCUSSION: Data obtained in this study suggest the involvement of OAT4 in placental passage of PFAAs. Placental passage of PFOS and PFOA is modified by the transporter protein OAT4 but not by ABCG2. This is the first study indicating

that OAT4 may decrease the fetal exposure to PFAAs and protect the fetus after maternal exposure to PFAAs but further studies are needed to confirm our findings.

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LA - ENG

PT - JOURNAL ARTICLE

DEP - 20150806

TA - Placenta

JT - Placenta

JID - 8006349

OTO - NOTNLM

OT - ABCG2

OT - Fetal exposure

OT - OAT4

OT - PFAA

OT - Perfluoro octane sulphonate

OT - Perfluoro octanoate
EDAT- 2015/08/26 06:00
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SO - Placenta. 2015 Aug 6. pii: S0143-4004(15)30013-8. doi:
10.1016/j.placenta.2015.07.119.

PMID- 26250865
OWN - NLM
STAT- Publisher
DA - 20150807
LR - 20150808
IS - 1879-1026 (Electronic)
IS - 0048-9697 (Linking)
DP - 2015 Aug 3
TI - Perfluoroalkyl substances in the Ebro and Guadalquivir river basins (Spain).
LID - S0048-9697(15)30388-0 [pii]
LID - 10.1016/j.scitotenv.2015.07.045 [doi]
AB - Mediterranean rivers are characteristically irregular with changes in flow and located in high population density areas. This affects the concentration of pollutants in the aquatic environments. In this study, the occurrence and sources of 21 perfluoroalkyl substances (PFASs) were determined in water, sediment and biota of the Ebro and Guadalquivir river basins (Spain). In water samples, of 21 analytes screened, 11 were found in Ebro and 9 in Guadalquivir. In both basins, the most frequents were PFBA, PFPeA and PFOA. Maximum concentration was detected for PFBA, up to 251.3ngL⁻¹ in Ebro and 742.9ngL⁻¹ in Guadalquivir. Regarding the sediments, 8 PFASs were detected in the samples from Ebro and 9 in those from Guadalquivir. The PFASs most frequently detected were PFBA, PFPeA, PFOA and PFOS. Maximum concentration in Ebro samples was, in dry weight, for PFOA (32.3ngg⁻¹) and in Guadalquivir samples for PFBA (63.8ngg⁻¹). For biota, 12 PFASs were detected in fish from the Ebro River and only one (PFOS) in that from Guadalquivir. In the Ebro basin, the most frequents were PFBA, PFHxA, PFOA, PFBS, PFOS and PFOSA. Maximum concentration in Ebro samples was, in wet weight, for PFHxA with 1280.2ngg⁻¹, and in Guadalquivir samples for PFOS with 79.8ngg⁻¹. These compounds were detected in the whole course of the rivers including the upper parts. In some points contamination was due to point sources mostly related to human activities (e.g. ski resorts, military camps, urban areas.). However, there are also some areas clearly affected by diffuse sources as atmospheric deposition.

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LA - ENG

PT - JOURNAL ARTICLE

DEP - 20150803

TA - Sci Total Environ

JT - The Science of the total environment

JID - 0330500

OTO - NOTNLM

OT - Fish

OT - PFASs

OT - Sediment

OT - Spatial distribution

OT - Surface water

EDAT- 2015/08/08 06:00

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PMID- 26327633
 OWN - NLM
 STAT- Publisher
 DA - 20150901
 LR - 20150904
 IS - 1879-1026 (Electronic)
 IS - 0048-9697 (Linking)
 VI - 538
 DP - 2015 Aug 28
 TI - Evaluating the impact of a fluoropolymer plant on a river macrobenthic community
 by a combined chemical, ecological and genetic approach.
 PG - 654-663
 LID - S0048-9697(15)30589-1 [pii]
 LID - 10.1016/j.scitotenv.2015.08.086 [doi]

AB - Effect-based monitoring is a recommended approach suggested in European
 Guidelines to assess the response of ecosystem affected by a pollution source,
 considering the effects at community, population, individual but also at
 suborganism level. A combined chemical, ecological and genetic approach was
 applied in order to assess the impact of a fluoropolymer plant on the
 macrobenthic community of the Northern Italian river Bormida (Piedmont region).
 The macrobenthic community living downstream of the industrial discharge was
 chronically exposed to a mixture of perfluoroalkyl substances (PFAS), with
 perfluorooctanoic acid as the main compound, at concentrations up to several
 µg/L. Ecological assessment proved that the downstream community was not
 substantially different from that living upstream of the pollution source. The
 impact on community is not quantifiable with the traditional monitoring methods
 used for ecological classification under European regulation because macrobenthic
 communities showed only slight differences in their structure. In order to
 highlight effects on genetic variability of the native population, a subcellular
 analysis by using the AFLP (Amplified Fragment Length Polymorphism) genetic
 technique was applied to genotype of individuals of a selected species
 (*Hydropsyche modesta*, Trichoptera) collected in the two sampling sites.
 Percentage of variation between the two populations was 6.8%, a threshold
 compatible with a genetic drift induced in the downstream population. The genetic
 study carried out in field identified a significant divergence between exposed
 and non-exposed populations, but at present it is not possible to associate this
 divergence to a specific effect induced by PFAS.

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LA - ENG
PT - JOURNAL ARTICLE
DEP - 20150828
TA - Sci Total Environ
JT - The Science of the total environment
JID - 0330500
OTO - NOTNLM
OT - Benthic invertebrates
OT - Effect-based monitoring
OT - Genetic selection
OT - PFOA
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OWN - NLM

STAT- Publisher

DA - 20150830

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IS - 1879-1026 (Electronic)

IS - 0048-9697 (Linking)

VI - 538

DP - 2015 Aug 26

TI - Perfluorinated sulfonate and carboxylate compounds and precursors in herring gull eggs from across the Laurentian Great Lakes of North America: Temporal and recent spatial comparisons and exposure implications.

PG - 468-477

LID - S0048-9697(15)30586-6 [pii]

LID - 10.1016/j.scitotenv.2015.08.083 [doi]

AB - Chemicals of emerging concern (CECs) in the basin of the Laurentian Great Lakes of North America include per- and poly-fluoroalkyl substances (PFASs) classified as perfluoroalkyl acids. We investigated several PFASs, and specifically 13 C4-C16 perfluorinated carboxylic acids (PFCAs), 4 (C4, C6, C8 and C10) perfluorinated sulfonates (PFSA), perfluoro-4-ethylcyclohexane sulfonate (PFEtCHxS) and selected precursors (e.g. perfluorobutane sulfonamide and perfluorooctane sulfonamide) in herring gull (*Larus argentatus*) eggs collected in 2012-2013 from 19 Canadian and U.S. colony sites across the Great Lakes. C6, C8 and C10 PFSA, PFEtCHxS, and C7-14 and C16 PFCAs were quantifiable at >97% of the 114 egg samples. PFEtCHxS concentrations ranged from n.d. to 3.1ng/g ww (highest in Lake Michigan eggs). Mean Sigma4PFSA (92 to 97% perfluorooctane sulfonate (PFOS)) and Sigma9PFCA concentration ranges were 44 to 740 and 4.8 to 118ng/g ww, respectively. Sigma4PFSA showed a clear increasing concentration trend from the northwest to the southeast colonies. Also, Sigma4PFCA to Sigma9PFSA concentration ratios in gull eggs were greater in eggs from Lake Superior relative to colonies in the other lakes. PFOS concentrations in some egg samples were greater than some of the known lowest observed effect concentrations (LOECs) measured and reported in captive bird model studies. This study showed the increasing complexity of PFAS-CECs, and emphasized the importance of continuing monitoring of bioaccumulative PFAS in Great Lakes herring gulls.

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LA - ENG
PT - JOURNAL ARTICLE
DEP - 20150826
TA - Sci Total Environ
JT - The Science of the total environment
JID - 0330500
OTO - NOTNLM
OT - Eggs
OT - Herring gull
OT - Laurentian Great Lakes
OT - PFOS
OT - Perfluorinated carboxylic acids
OT - Perfluorinated sulfonates
EDAT- 2015/09/01 06:00
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AID - S0048-9697(15)30586-6 [pii]
AID - 10.1016/j.scitotenv.2015.08.083 [doi]
PST - aheadofprint
SO - Sci Total Environ. 2015 Aug 26;538:468-477. doi: 10.1016/j.scitotenv.2015.08.083.

PMID- 25889547
OWN - NLM
STAT- In-Process
DA - 20150527

IS - 1879-1026 (Electronic)

IS - 0048-9697 (Linking)

VI - 524-525

DP - 2015 Aug 15

TI - Review on the occurrence, fate and removal of perfluorinated compounds during wastewater treatment.

PG - 81-92

LID - 10.1016/j.scitotenv.2015.04.023 [doi]

LID - S0048-9697(15)00459-3 [pii]

AB - Perfluorinated compounds (PFCs) consist of a fully fluorinated hydrophobic alkyl chain attached to a hydrophilic end group. Due to their wide use in several industrial and household applications, they have been detected in numerous Sewage Treatment Plants (STPs) during the last ten years. The present review reports the occurrence of 22 PFCs (C4-C14, C16, C18 carboxylates; C4-C8 and C10 sulfonates; 3 sulfonamides) in municipal or/and industrial wastewater, originating from 24 monitoring studies. PFCs levels in sewage sludge have also been reported using data from 12 studies. Most of the above monitoring data originate from the USA, North Europe and Asia and concern perfluorooctanesulfonate (PFOS) and perfluorooctanoic acid (PFOA), while limited information is available from Mediterranean area, Canada and Australia. PFCs concentrations range up to some hundreds ng/L and some thousands ng/g dry weight in raw wastewater and sludge, respectively. They are not significantly removed during secondary biological treatment, while their concentrations in treated wastewater are often higher compared to raw sewage. Their biodegradation during wastewater treatment does not seem possible; whereas some recent studies have noted the potential transformation of precursor compounds to PFCs during biological wastewater treatment. PFCs sorption onto sludge has been studied in depth and seems to be an important mechanism governing their removal in STPs. Concerning tertiary treatment technologies, significant PFCs removal has been observed using activated carbon, nanofiltration, reverse osmosis or applying advanced oxidation and reduction processes. Most of these studies have been conducted using pure water, while in many cases the experiments have been performed under extreme laboratory conditions (high concentrations, high radiation source, temperature or pressure). Future efforts should be focused on better understanding of biotransformation processes occurred in aerobic and anaerobic bioreactors and result to PFCs formation and on the application of advanced treatment technologies under conditions commonly found in STPs.

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LA - eng

PT - Journal Article

PT - Research Support, Non-U.S. Gov't

PT - Review
 DEP - 20150416
 PL - Netherlands
 TA - Sci Total Environ
 JT - The Science of the total environment
 JID - 0330500
 SB - IM
 OTO - NOTNLM
 OT - Biosolids
 OT - Degradation
 OT - Elimination
 OT - Occurrence
 OT - Perfluorochemicals
 OT - Sewage
 OT - Treatment
 EDAT- 2015/04/19 06:00
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 10.1016/j.scitotenv.2015.04.023. Epub 2015 Apr 16.

 PMID- 25889541
 OWN - NLM
 STAT- In-Process
 DA - 20150527
 IS - 1879-1026 (Electronic)
 IS - 0048-9697 (Linking)
 VI - 524-525
 DP - 2015 Aug 15
 TI - Perfluoroalkyl acids in municipal landfill leachates from China: Occurrence, fate
 during leachate treatment and potential impact on groundwater.
 PG - 23-31
 LID - 10.1016/j.scitotenv.2015.03.111 [doi]
 LID - S0048-9697(15)00395-2 [pii]
 AB - Raw and treated landfill leachate samples were collected from 5 municipal
 landfill sites in China to measure the concentrations and contamination profile
 of perfluoroalkyl acids (PFAAs) in leachate during different steps of treatment.
 The total concentration of PFAAs (summation operatorPFAAs) ranged from 7280 to
 292,000 ng L(-1) in raw leachate and from 98.4 to 282,000 ng L(-1) in treated
 leachate. The dominant compounds measured were PFOA (mean contribution 28.8% and
 36.8% in raw and treated leachate, respectively) and PFBS (26.1% and 40.8% in raw

and treated leachate, respectively). A calculation of mass flows during the leachate treatment processes showed that the fate of individual PFAAs was substance and treatment-specific. The Chinese national leakage of summation operatorPFAAs to groundwater from landfill leachate was estimated to be 3110 kg year⁻¹), which is a significant environmental release that is potentially threatening the sustainable use of groundwater as a drinking water source.

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PT - Journal Article

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DEP - 20150415

PL - Netherlands

TA - Sci Total Environ

JT - The Science of the total environment

JID - 0330500

SB - IM

OTO - NOTNLM

OT - China

OT - Leachate

OT - Mass flow

OT - Perfluoroalkyl acids

OT - Treatment

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PST - ppublish

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OWN - NLM

STAT- In-Process

DA - 20150527

IS - 1879-1026 (Electronic)

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VI - 524-525

DP - 2015 Aug 15

TI - Spatial distribution and partition of perfluoroalkyl acids (PFAAs) in rivers of the Pearl River Delta, southern China.

PG - 1-7

LID - 10.1016/j.scitotenv.2015.04.004 [doi]

LID - S0048-9697(15)00440-4 [pii]

AB - This study investigated the occurrence of perfluoroalkyl acids (PFAAs) in surface water from 67 sampling sites along rivers of the Pearl River Delta in southern China. Sixteen PFAAs, including perfluoroalkyl carboxylic acids (PFCAs, C5-14, C16 and C18) and perfluoroalkyl sulfonic acids (PFASs, C4, C6, C8 and C10) were determined by high performance liquid chromatography-negative electrospray ionization-tandem mass spectrometry (HPLC/ESI-MS/MS). Total PFAA concentrations (summation operator PFAAs) in the surface water ranged from 1.53 to 33.5 ng.L⁻¹ with an average of 7.58 ng.L⁻¹. Perfluorobutane sulfonic acid (PFBS), perfluorooctanoic acid (PFOA), and perfluorooctane sulfonic acid (PFOS) were the three most abundant PFAAs and on average accounted for 28%, 16% and 10% of summation operator PFAAs, respectively. Higher concentrations of summation operator PFAAs were found in the samples collected from Jiangmen section of Xijiang River, Dongguan section of Dongjiang River and the Pearl River flowing the cities which had very well-developed manufacturing industries. PCA model was employed to quantitatively calculate the contributions of extracted sources. Factor 1 (72.48% of the total variance) had high loading for perfluorohexanoic acid (PFHxA), perfluoropentanoic acid (PFPeA), PFBS and PFOS. For factor 2 (10.93% of the total variance), perfluorononanoic acid (PFNA) and perfluoroundecanoic acid (PFUdA) got high loading. The sorption of PFCAs on suspended particulate matter (SPM) increased by approximately 0.1 log units for each additional CF₂ moiety and that on sediment was approximately 0.8 log units lower than the SPM logK_d values. In addition, the differences in the partition coefficients were influenced by the structure discrepancy of absorbents and influx of fresh river water. These data are essential for modeling the transport and environmental fate of PFAAs.

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LA - eng

PT - Journal Article

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DEP - 20150415

PL - Netherlands

TA - Sci Total Environ

JT - The Science of the total environment

JID - 0330500

SB - IM

OTO - NOTNLM

OT - K(d)

OT - K(oc)

OT - Perfluoroalkyl acids

OT - Source appointment

OT - The Pearl River Delta

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PST - ppublish
SO - Sci Total Environ. 2015 Aug 15;524-525:1-7. doi: 10.1016/j.scitotenv.2015.04.004.
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PMID- 26252803
OWN - NLM
STAT- In-Data-Review
DA - 20150902
IS - 1744-6848 (Electronic)
IS - 1744-683X (Linking)
VI - 11
IP - 36
DP - 2015 Sep 28
TI - Faceted fatty acid vesicles formed from single-tailed perfluorinated surfactants.
PG - 7143-50
LID - 10.1039/c5sm01494h [doi]

AB - The aggregation behavior and rheological properties of two mixtures of perfluorononanoic acid (PFNA)/NaOH and perfluorodecanoic acid (PFDA)/NaOH were investigated in aqueous solutions. Interestingly, pH-sensitive polyhedral fatty acid vesicles were spontaneously formed in both systems, which were determined by freeze-fracture transmission electron microscopy (FF-TEM) measurements. Especially, a phase transition from faceted vesicles to the L3 phase with the increase of pH was observed in the PFNA/NaOH system while it was not observed in the PFDA/NaOH system. Differential scanning calorimetry (DSC) and wide angle X-ray scattering (WAXS) measurements confirmed that the bilayers of the faceted vesicles were in the crystalline state indicating that the crystallization of fluorocarbon chains was the main driving force for their formation. Besides, the two systems of faceted perfluorofatty acid vesicles exhibit interesting rheological properties, for instance, they showed high viscoelasticity and shear-thinning behaviour, and the elastic modulus (G') and viscous modulus (G'') of PFDA/NaOH vesicles were much higher than those of PFNA/NaOH vesicles. Conversely, the solution of the L3 phase with fluid bilayers did not present viscoelastic properties. Therefore, the viscoelastic properties of vesicles resulted from the crystalline fluorinated alkyl chains with high rigidity at room temperature and the dense packing of vesicles. As far as we know, such faceted fatty acid vesicles formed from single-tailed perfluorinated surfactants have been rarely reported. Our work successfully constructs polyhedral fatty acid vesicles and proposes their formation mechanism, which should be a great advance in the fundamental research of fatty acid vesicles.

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 AU - Yang Z
 LA - eng
 PT - Journal Article
 DEP - 20150807
 PL - England
 TA - Soft Matter
 JT - Soft matter
 JID - 101295070
 SB - IM
 EDAT- 2015/08/08 06:00
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 PHST- 2015/09/02 [epublish]
 AID - 10.1039/c5sm01494h [doi]
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 SO - Soft Matter. 2015 Sep 28;11(36):7143-50. doi: 10.1039/c5sm01494h. Epub 2015 Aug 7.

PMID- 25966403
 OWN - NLM
 STAT- In-Process
 DA - 20150513
 IS - 1873-3573 (Electronic)
 IS - 0039-9140 (Linking)
 VI - 141
 DP - 2015 Aug 15
 TI - Application of surfactant-templated ordered mesoporous material as sorbent in micro-solid phase extraction followed by liquid chromatography-triple quadrupole mass spectrometry for determination of perfluorinated carboxylic acids in aqueous media.
 PG - 200-6
 LID - 10.1016/j.talanta.2015.03.049 [doi]
 LID - S0039-9140(15)00202-7 [pii]
 AB - In the present study, micro-solid phase extraction (micro-SPE) followed by liquid chromatography-triple tandem mass spectrometry (LC-MS/MS) was developed for the determination of perfluorocarboxylic acids (PFCAs) at trace levels in water

samples. The micro-SPE device comprised of a porous polypropylene membrane bag containing 5mg sorbent. The membrane bag acted as a clean-up filter and prevented matrix compounds from interfering with the extraction process. Analysis was carried out by LC-MS/MS in negative electrospray ionization mode. MS/MS parameters were optimized for multiple reaction monitoring. Calcined and non-calcined MCM-41, as silica-ordered mesoporous materials, were used as sorbents in micro-SPE for the extraction of five PFCAs-perfluoropentanoic acid (PFPA), perfluoroheptanoic acid (PFHpA), perfluorooctanoic acid (PFOA), perfluorononanoic acid (PFNA), and perfluorodecanoic acid (PFDA)-from aqueous media. The performances of these two sorbents were compared with other sorbents such as octadecylsilane (C18) modified silica, HayeSep-A, HayeSep-B, and Porapak-R. It was found that non-calcined MCM-41 showed better extraction performance for the analytes considered. Parameters influencing extraction efficiency, such as desorption time, extraction time, desorption solvent, and salt concentration, were investigated. The effect of the matrix on MS signals (suppression or enhancement) was also evaluated. Only minor effects on ionization efficiencies were observed. The developed method proved to be convenient and offered good sensitivity and reproducibility. The limits of detection ranged from 0.02 to 0.08ng L⁽⁻¹⁾, with a relative standard deviations between 1.9 and 10.5. It was successfully applied to the extraction of PFCAs in river and rain water samples. As expected from the ubiquitous nature of PFCAs, contamination at low levels was detected for some analytes in the samples (with the highest concentration recorded for PFOA). Satisfactory relative recoveries ranging between 64% and 127% at spiking levels of 10ng L⁽⁻¹⁾ of each analyte were obtained.

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LA - eng

PT - Journal Article

DEP - 20150404

PL - Netherlands

TA - Talanta

JT - Talanta

JID - 2984816R

OTO - NOTNLM

OT - Micro-solid phase extraction
OT - Perfluorinated carboxylic acid
OT - Silica ordered mesoporous
EDAT- 2015/05/13 06:00
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AID - S0039-9140(15)00202-7 [pii]
AID - 10.1016/j.talanta.2015.03.049 [doi]
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SO - Talanta. 2015 Aug 15;141:200-6. doi: 10.1016/j.talanta.2015.03.049. Epub 2015 Apr 4.

PMID- 26001964
OWN - NLM
STAT- In-Data-Review
DA - 20150729
IS - 1096-0929 (Electronic)
IS - 1096-0929 (Linking)
VI - 146
IP - 2
DP - 2015 Aug
TI - The Environmental Pollutants Perfluorooctane Sulfonate and Perfluorooctanoic Acid Upregulate Uncoupling Protein 1 (UCP1) in Brown-Fat Mitochondria Through a UCP1-Dependent Reduction in Food Intake.
PG - 334-43
LID - 10.1093/toxsci/kfv098 [doi]
AB - The environmental pollutants perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) cause a dramatic reduction in the size of the major adipose tissue depots and a general body weight decrease when they are added to the food of mice. We demonstrate here that this is mainly due to a reduction in food intake; this reduction was not due to food aversion. Remarkably and unexpectedly, a large part of the effect of PFOA/PFOS on food intake was dependent on the presence of the uncoupling protein 1 (UCP1) in the mice. Correspondingly, PFOA/PFOS treatment induced recruitment of brown adipose tissue mitochondria: increased oxidative capacity and increased UCP1-mediated oxygen consumption (thermogenesis). In mice pair-fed to the food intake during PFOA/PFOS treatment in wildtype mice, brown-fat mitochondrial recruitment was also induced. We conclude that we have uncovered the existence of a regulatory component of food intake that is dependent upon brown adipose tissue thermogenic activity. The possible environmental consequences of this novel PFOA/PFOS effect (a possible decreased fitness) are noted, as well as the perspectives of this finding on the general understanding of control of food intake control and its possible extension to combatting obesity.
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LA - eng
PT - Journal Article
DEP - 20150521
PL - United States
TA - Toxicol Sci
JT - Toxicological sciences : an official journal of the Society of Toxicology
JID - 9805461
SB - IM
OTO - NOTNLM
OT - adipose tissue

OT - body temperature
 OT - fatty acid oxidation
 OT - food restriction
 OT - thermogenesis
 EDAT- 2015/05/24 06:00
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 PHST- 2015/05/21 [aheadofprint]
 AID - kfv098 [pii]
 AID - 10.1093/toxsci/kfv098 [doi]
 PST - ppublish
 SO - Toxicol Sci. 2015 Aug;146(2):334-43. doi: 10.1093/toxsci/kfv098. Epub 2015 May 21.

 PMID- 26001962
 OWN - NLM
 STAT- In-Data-Review
 DA - 20150729
 IS - 1096-0929 (Electronic)
 IS - 1096-0929 (Linking)
 VI - 146
 IP - 2
 DP - 2015 Aug
 TI - Na⁺/Taurocholate Cotransporting Polypeptide and Apical Sodium-Dependent Bile Acid Transporter Are Involved in the Disposition of Perfluoroalkyl Sulfonates in Humans and Rats.
 PG - 363-73
 LID - 10.1093/toxsci/kfv102 [doi]
 AB - Among the perfluoroalkyl sulfonates (PFASs), perfluorohexane sulfonate (PFHxS), and perfluorooctane sulfonate (PFOS) have half-lives of several years in humans, mainly due to slow renal clearance and potential hepatic accumulation. Both compounds undergo enterohepatic circulation. To determine whether transporters involved in the enterohepatic circulation of bile acids are also involved in the disposition of PFASs, uptake of perfluorobutane sulfonate (PFBS), PFHxS, and PFOS was measured using freshly isolated human and rat hepatocytes in the absence or presence of sodium. The results demonstrated sodium-dependent uptake for all 3 PFASs. Given that the Na⁽⁺⁾/taurocholate cotransporting polypeptide (NTCP) and the apical sodium-dependent bile salt transporter (ASBT) are essential for the enterohepatic circulation of bile acids, transport of PFASs was investigated in stable CHO Flp-In cells for human NTCP or HEK293 cells transiently expressing rat NTCP, human ASBT, and rat ASBT. The results demonstrated that both human and rat NTCP can transport PFBS, PFHxS, and PFOS. Kinetics with human NTCP revealed Km values of 39.6, 112, and 130 microM for PFBS, PFHxS, and PFOS, respectively. For rat NTCP Km values were 76.2 and 294 microM for PFBS and PFHxS, respectively. Only PFOS was transported by human ASBT whereas rat ASBT did not transport any of the tested PFASs. Human OSTalpha/beta was also able to transport all 3 PFASs. In conclusion, these results suggest that the long half-life and the hepatic accumulation of PFOS in humans are at least, in part, due to transport by NTCP

and ASBT.

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JT - Toxicological sciences : an official journal of the Society of Toxicology

JID - 9805461

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OTO - NOTNLM

OT - hepatocytes

OT - perfluoroalkyl sulfonates

OT - perfluorobutane sulfonate

OT - perfluorohexane sulfonate

OT - perfluorooctane sulfonate

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AID - 10.1093/toxsci/kfv102 [doi]

PST - ppublish

SO - Toxicol Sci. 2015 Aug;146(2):363-73. doi: 10.1093/toxsci/kfv102. Epub 2015 May 21.